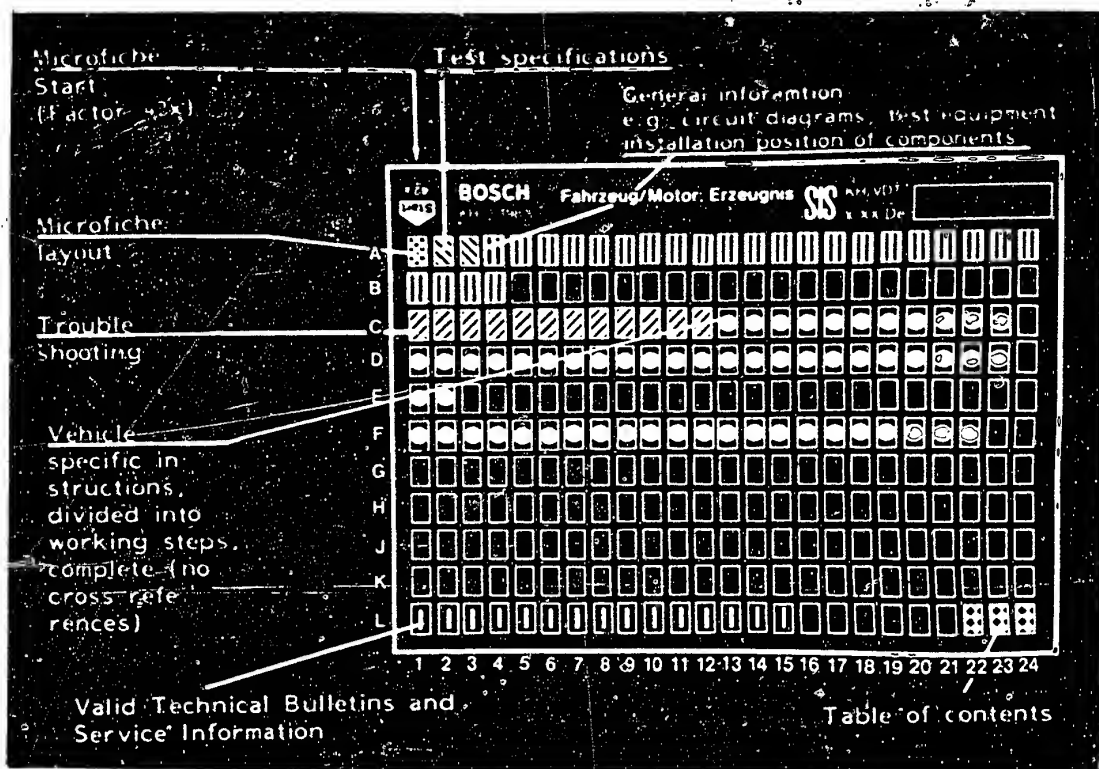


# Microfiche layout



1. Read from left to right
2. Title of microfiche (appears on each coordinate)

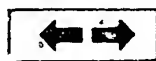
<b>E 16</b>	Product/assembly/test step	
	Vehicle/engine	

Coordinate

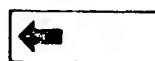
3. Limits of section



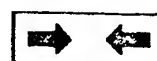
Beginning



Mid-section



End



One-page section

4. Purely vehicle-specific passages in the text are marked with a vertical bar.

5. Reference to relevant working steps in the test specifications, e.g. coordinate C6.

**C 6**

**A1**

Trouble-Shooting Plan



## 1. Test specifications

Ignition coil primary	0.7...1.2 $\Omega$	<b>C15</b>
Ignition coil secondary	6.9...11.9 k $\Omega$	
Knock control unit voltage supply	9 V... $U_B$	<b>D12</b>
Knock sensor	270...330 k $\Omega$	<b>D14</b>
Tightening torque for knock sensor	11 ... 15 Nm	
Basic ignition setting with engine idling	10° BTDC	<b>D18</b>
Spark advance at 2500 $\pm$ 50 min <sup>-1</sup>	26° ... 32° BTDC	<b>D20</b>
Trigger box voltage supply	12 ... 14 V	<b>D22</b>
Ignition coil voltage supply	$\geq$ 10 V	
Primary voltage with engine idling	295 ... 365 V	<b>E1</b>



Test specifications (continued)

Ignition pulse generator  
voltage supply  
with ignition on

≥ 6 V

**F7**

See Autodata test specifications for settings for  
ignition, idle speed, exhaust gas, valve clearance etc.

**A3**

Test specifications  
Peugeot



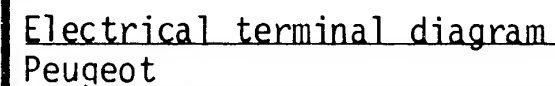


- 1 = Battery
- 2 = Ignition and starting switch
- 3 = Power-supply relay
- 3a = Reversed-polarity protection diode

- 4 = Trigger box
- 5 = Ignition coil
- 6 = Ignition distributor
- 7 = Ignition distributor connector

- 8 = Ignition timing unit
- 9 = Knock control unit
- 10 = Indicator lamp
- 11 = Knock sensor
- 12 = L-Jetronic control unit

## 2. Electrical terminal diagram





1 = TI-I trigger box    2 = Ignition coil    3 = Heat sink

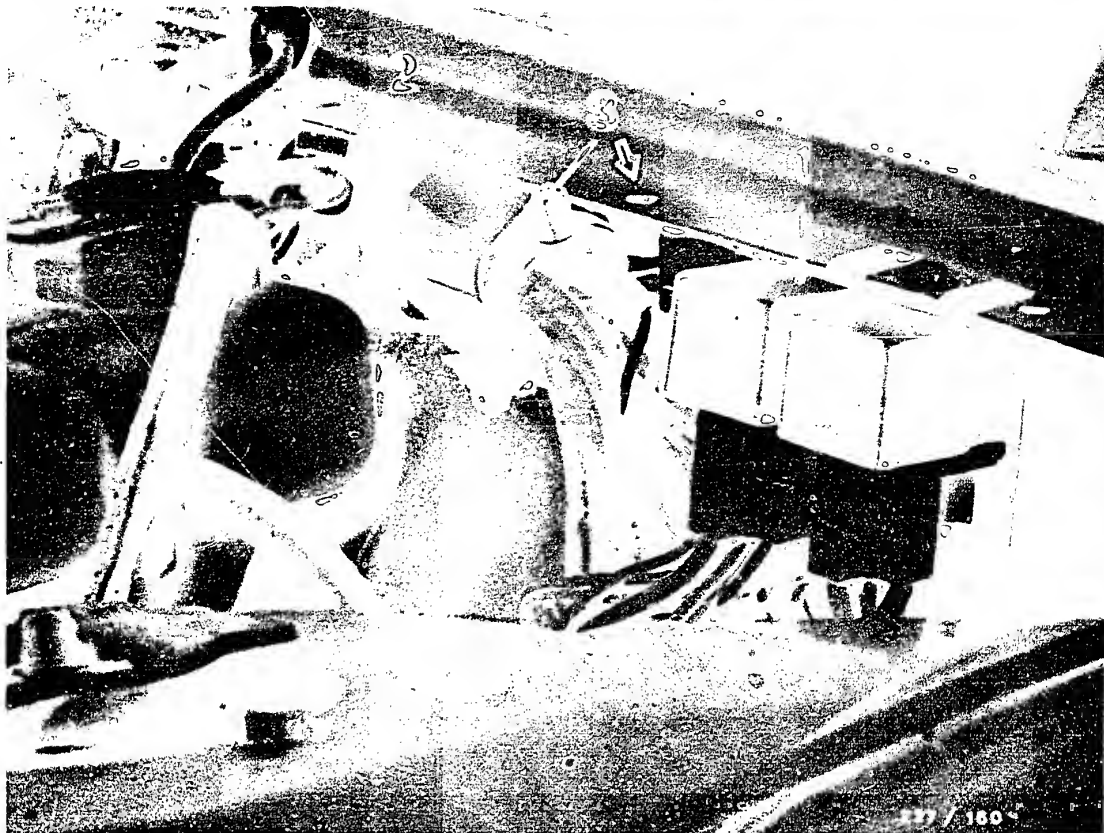
### 3. Installation position of components

The trigger box and the ignition coil are mounted on a common heat sink and are housed in the engine compartment.

**A6**

Installation position of components  
Peugeot





- 1 = Power-supply relay for electronic ignition
- 2 = Reverse-polarity protection diode for power-supply relay.
- 3 = Wiring harness fastening

**A7**

Installation position of components  
Peugeot



The knock control unit is situated in the passenger compartment on the right-side near the transmission tunnel.

#### How to remove

Open the glove compartment.

Remove the caps in the glove compartment (see top picture, item 1).

Guide the plastic stops along the slots and unhook (see top picture, item 2).

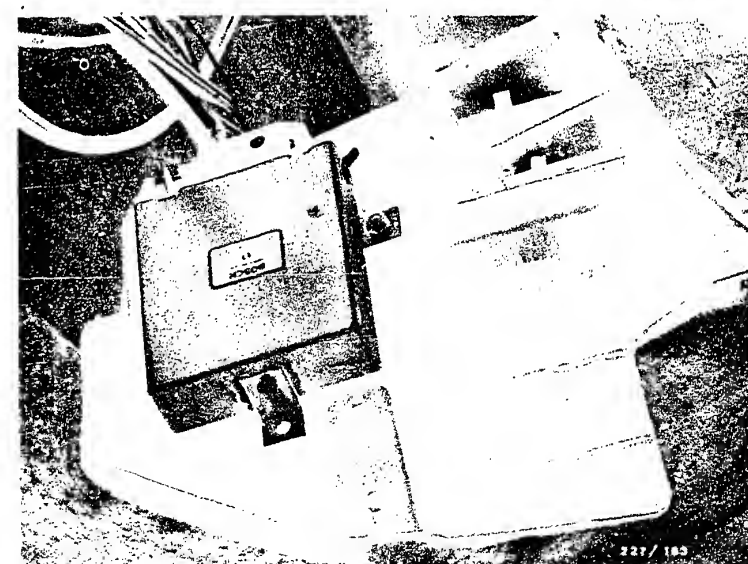
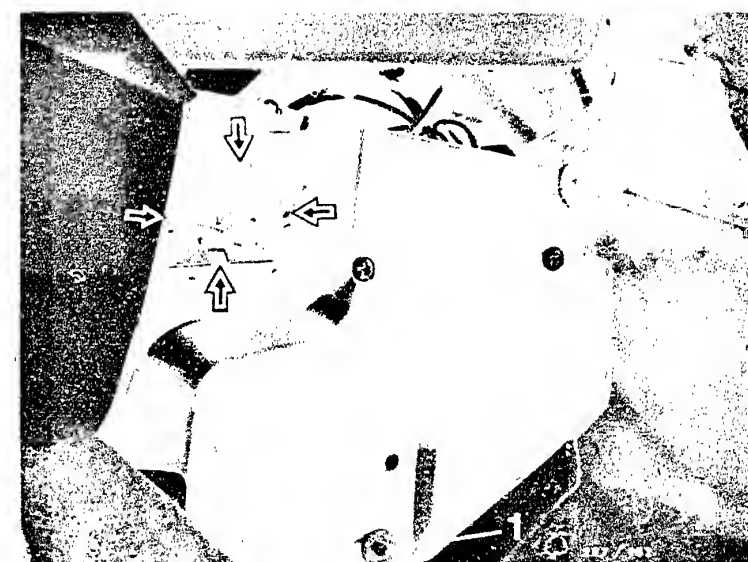
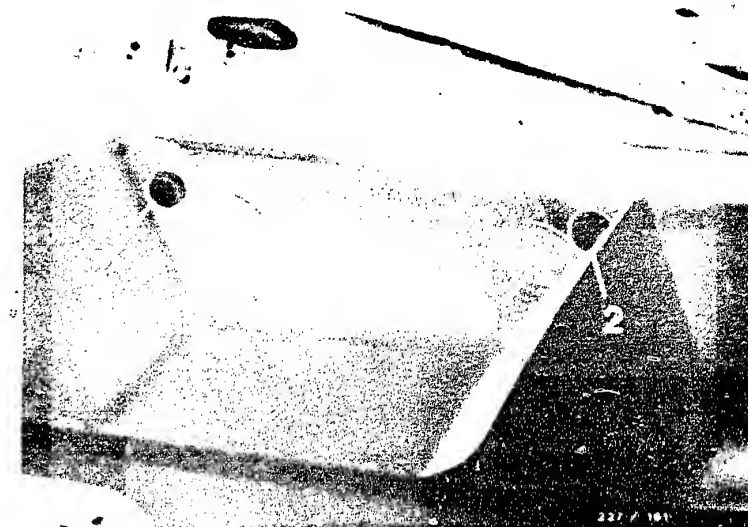
Remove both glove compartment bearing pins. Remove glove compartment.

Remove air outlet grille on side panelling. Already removed in center picture (arrows).

Partially bend back the carpet.

Unscrew 2 fastening screws from side panelling (see center picture, item 1).

The knock control unit is screwed onto the back of the side panelling (see bottom picture).



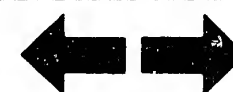
**A8**

Installation position of components  
Peugeot



**A9**

Installation position of components  
Peugeot





The ignition timing unit is situated in the passenger compartment on the left-hand side near the transmission tunnel.

#### How to remove

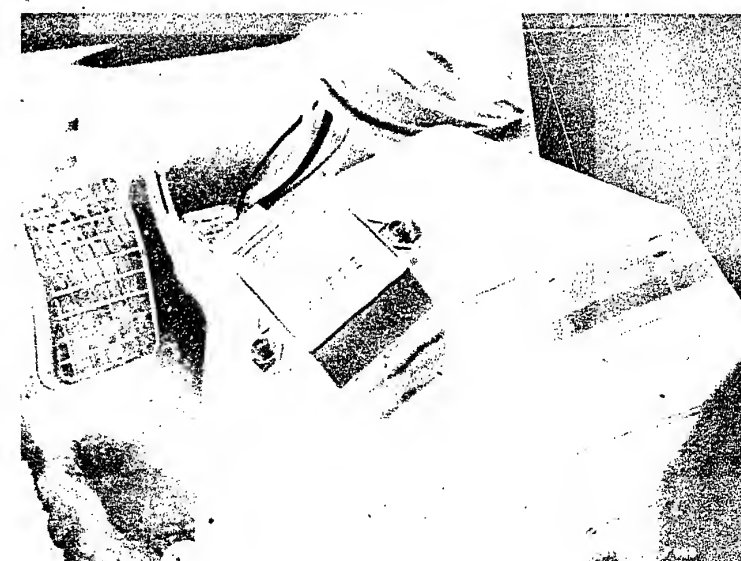
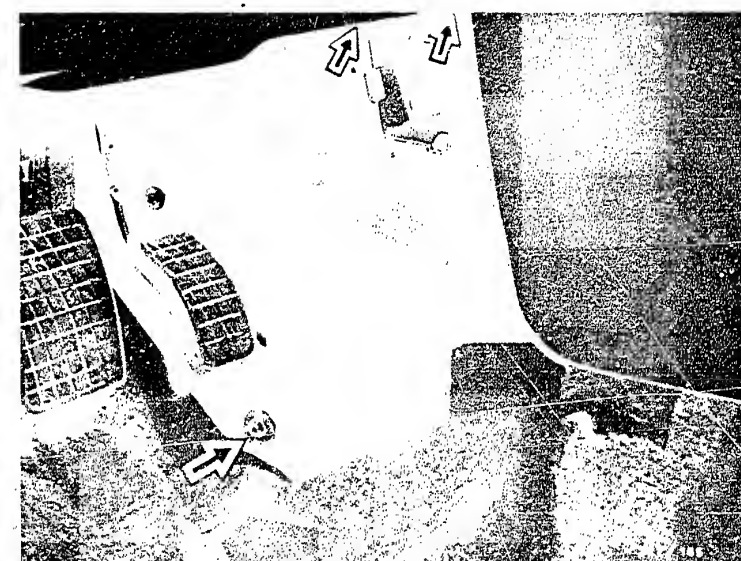
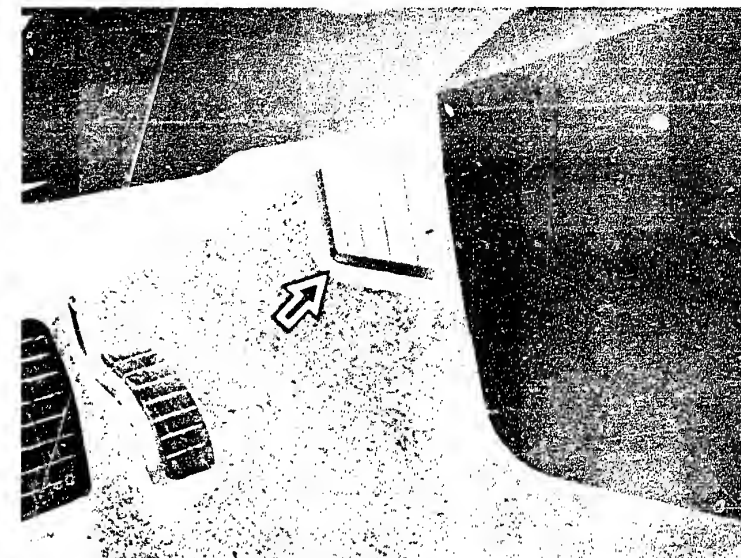
Remove the air outlet grille from the side panelling. (See top picture, arrow).

Partially bend back the carpet.

Unscrew 3 fastening screws from side panelling (see center picture, arrows).

The ignition timing unit is screwed onto the back of the side panelling.

(See bottom picture).



**A10**

Installation position of components

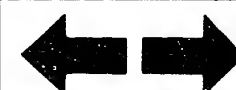
Peugeot



**A11**

Installation position of components

Peugeot





The indicator lamp including protective resistor are in the instrument panel (top picture).

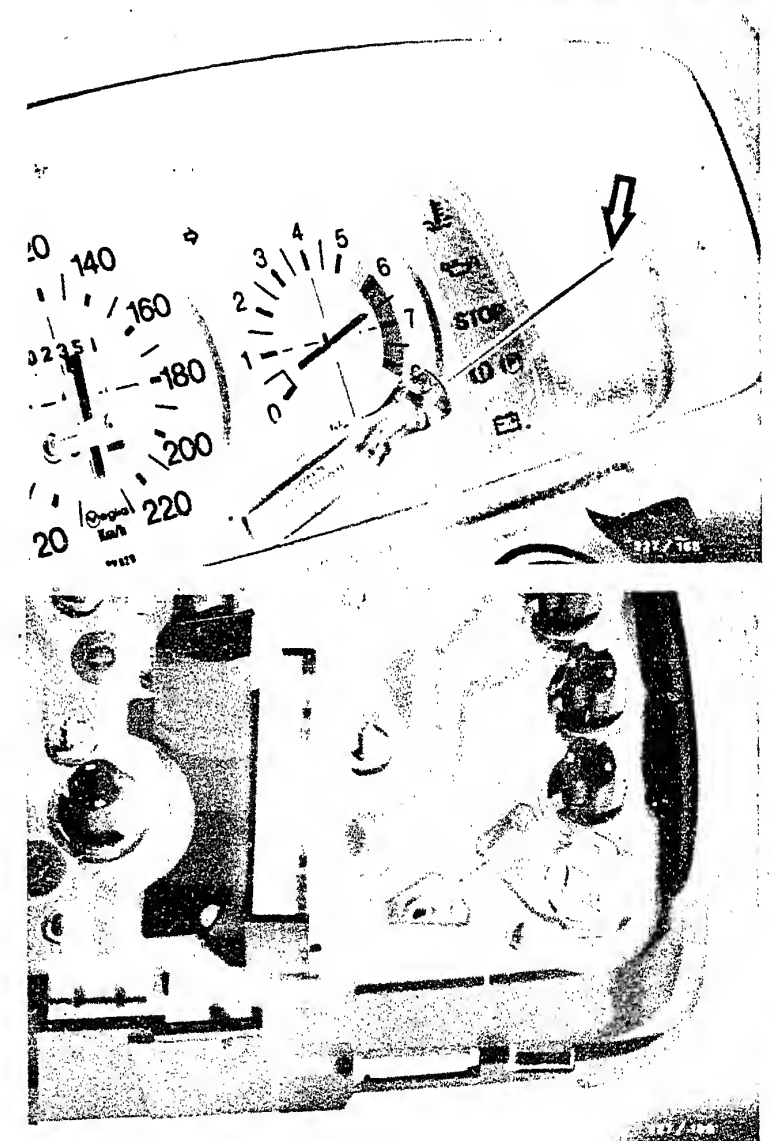
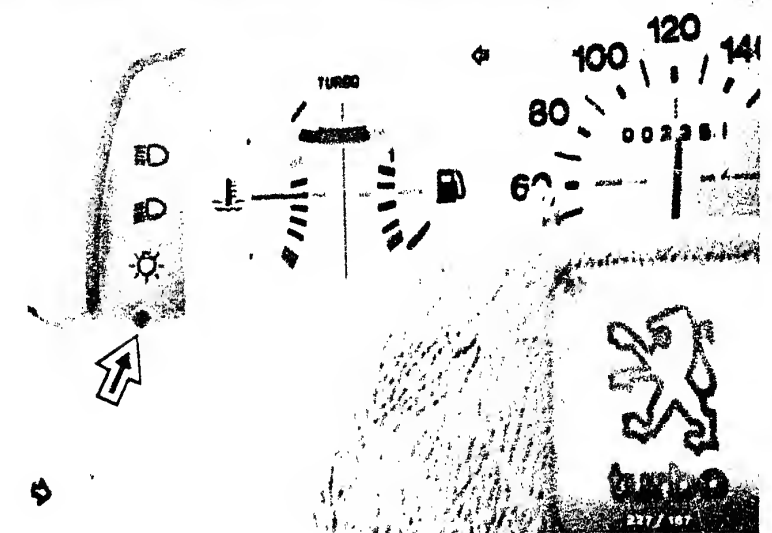
#### How to remove

Remove the steering wheel (wheels straight ahead).

Introduce a thin screwdriver into the two instrument panel holes one after the other (see centre picture, arrow).

The instrument panel is released by pressing lightly with the screwdriver.

Remove the instrument panel from its installation recess (speedometer shaft has latch-type connection).



Instrument panel removed, view from rear.

1 = Indicator lamp

2 = 750  $\Omega$  resistor

**A12**

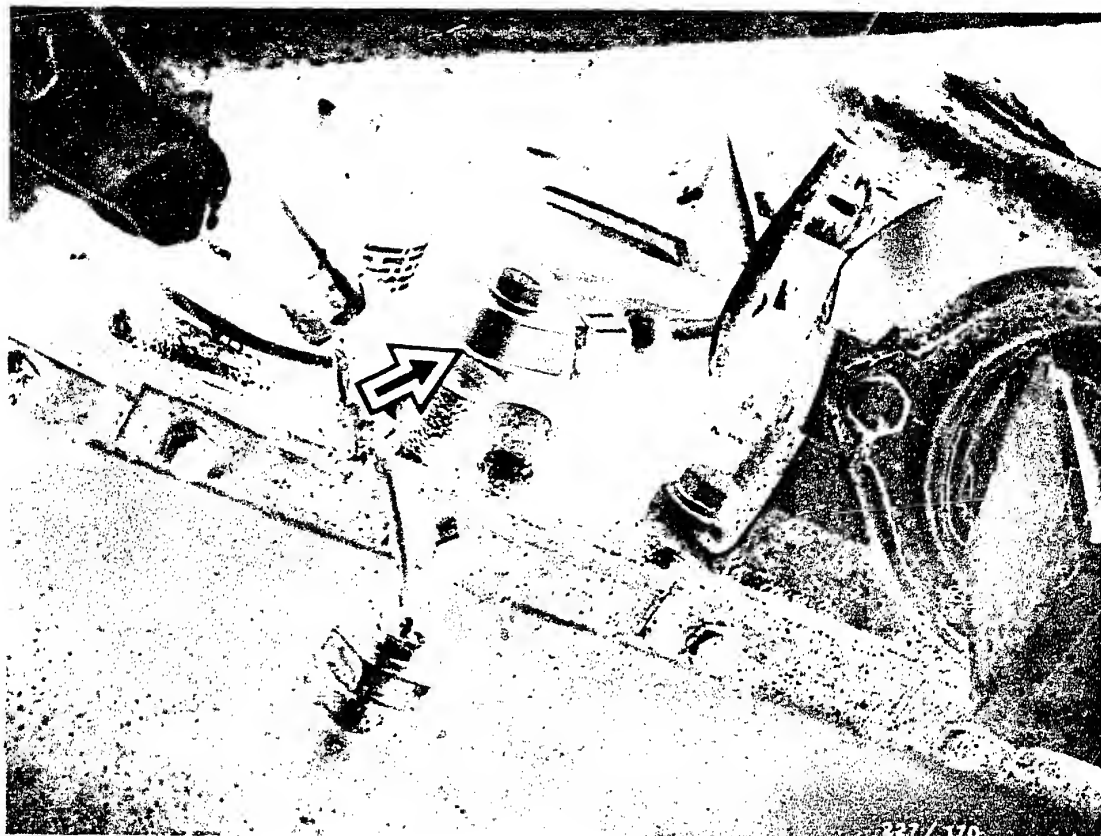
Installation position of components  
Peugeot



**A13**

Installation position of components  
Peugeot





1 = Knock sensor

The knock sensor is on the engine block (near oil filter) on the left-hand side in the forward direction of travel.

#### Notes:

Note the installation position of the knock sensor (connection horizontal). See picture.

Install knock sensor fastening screw without plain washer, spring lock washer, tooth lock washer etc.

Tightening torque 11 ... 15 Nm

Secure fastening screw only with locking paint.



The L-Jetronic control unit is housed above the glove compartment.

How to remove:

Open the glove compartment.

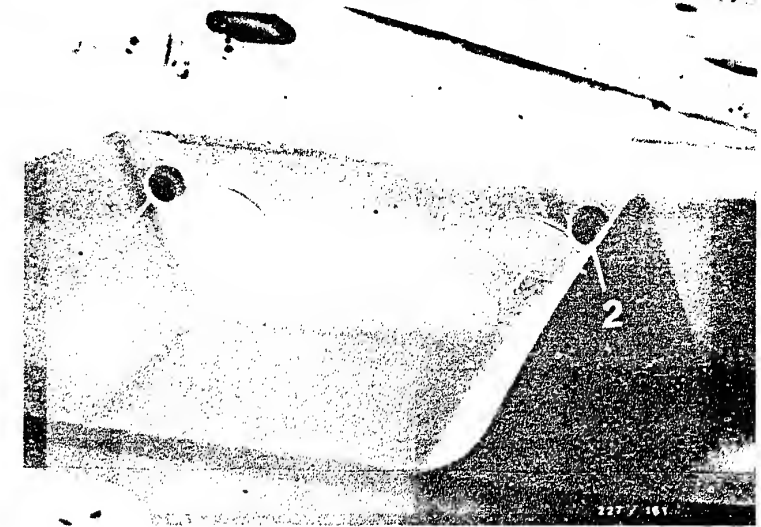
Remove the caps in the glove compartment (see top picture, item 1).

Guide the plastic stops along the slots and unhook (see top picture, item 2).

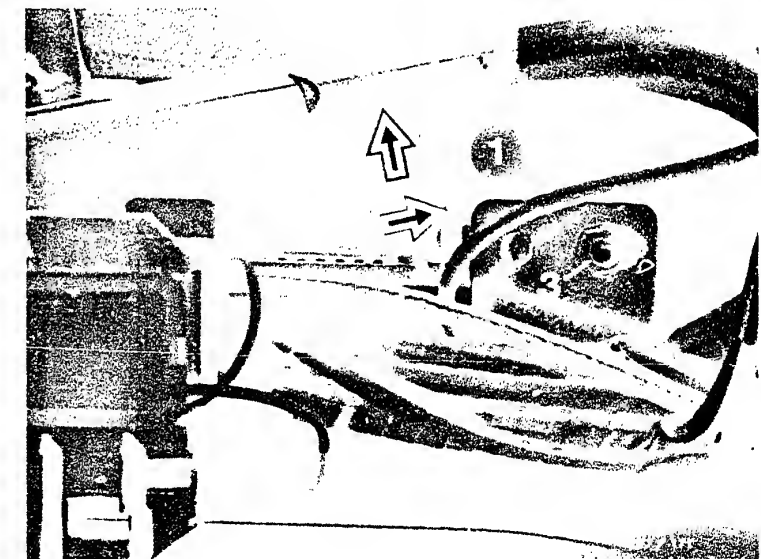
Remove both glove compartment bearing pins. Remove the glove compartment.

Press the detent (1) of the L-Jetronic plug in the direction of the arrow so that the plug unlatches. Hinge up the plug (2) in the direction of the arrow. (See bottom picture).

Unscrew the fastening screws (3) of the control unit.



- 1 = Detent of L-Jetronic plug
- 2 = L-Jetronic plug
- 3 = Fastening of L-Jetronic control unit



**A15**

Installation position of components  
Peugeot



**A16**

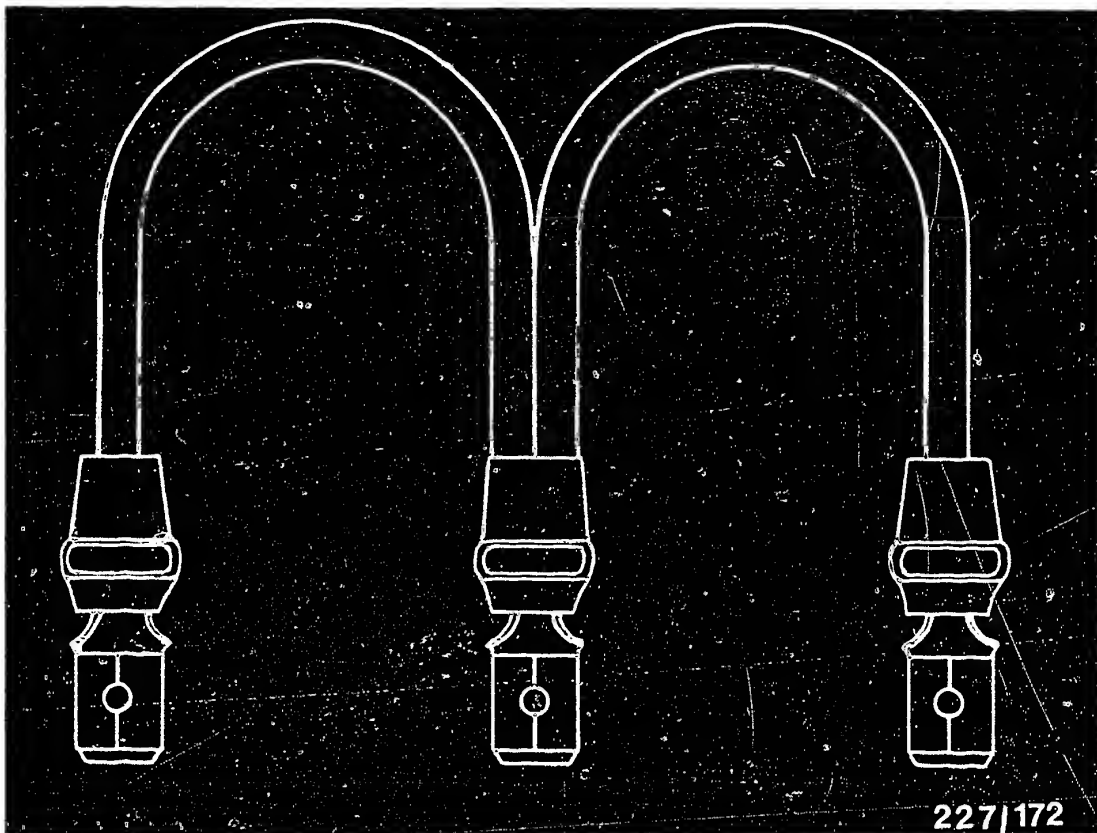
Installation position of components  
Peugeot



#### 4. Necessary test equipment and aids

Motortester e.g.	MOT 201	0 684 000 201
Spark gap e.g.		
Ignition coil and condenser tester	EFAW 106 A	0 691 100 001
or single spark gap	EF 1177/7	1 684 531 000
5 k $\Omega$ sleeve-type suppressor		0 356 500 001
Dwell-angle tester	KTE 001.03	0 684 400 103
	MOT 100	0 684 000 100
	MOT 101	0 684 000 101
	MOT 102	0 684 000 102
	MOT 104	0 684 000 104
	MOT 200	0 684 000 200
	MOT 201	0 684 000 201
	MOT 300	0 684 000 300
Ohmmeter or e.g.	ETE 014.00 Pontavi Wh2	0 684 101 400 Commercially available
Voltmeter e.g.	MOT 201	0 684 000 201
Test prods		Commercially available
Thermal conduction paste		5 942 860 003
Screw locking paint	30 g	5 703 245 003
Torque wrench 5 ... 60 Nm		Commercially available





1 = Auxiliary lead to be user-fabricated

The auxiliary lead is required for bridging the power-supply relay (ignition).

Necessary parts: approx. 150 mm cable 2.5 mm<sup>2</sup>  
3 blade terminals 8 784 480 011

**A18**

Necessary test equipment and aids  
Peugeot



## 5. Danger of accident on electronic ignition systems

Increased demands of modern engines on the ignition system combined with the desire for freedom of maintenance have recently led to electronic ignition systems being fitted as standard. Usually the ignition power of electronic systems (of almost all manufacturers) is higher than that of conventional systems, and there are signs of further increases in power. Electronic ignition systems thus reach a power range which can be highly dangerous if live parts or terminals are touched (both on the primary as well as the secondary sides).

In this connection we should like to point out that the VDE regulations, in particular VDE 0104/7.67 and/or the respective national regulations must be followed when testing or working on the ignition system.

The ignition should always be switched off when working on the ignition system (switch off ignition or voltage source). Such work includes:

- Connecting of engine test equipment (timing light, dwell-tach tester, ignition oscilloscope etc.).
- Replacing parts of the ignition system (spark plug, ignition coil, ignition distributor, H.T. ignition cable etc.).

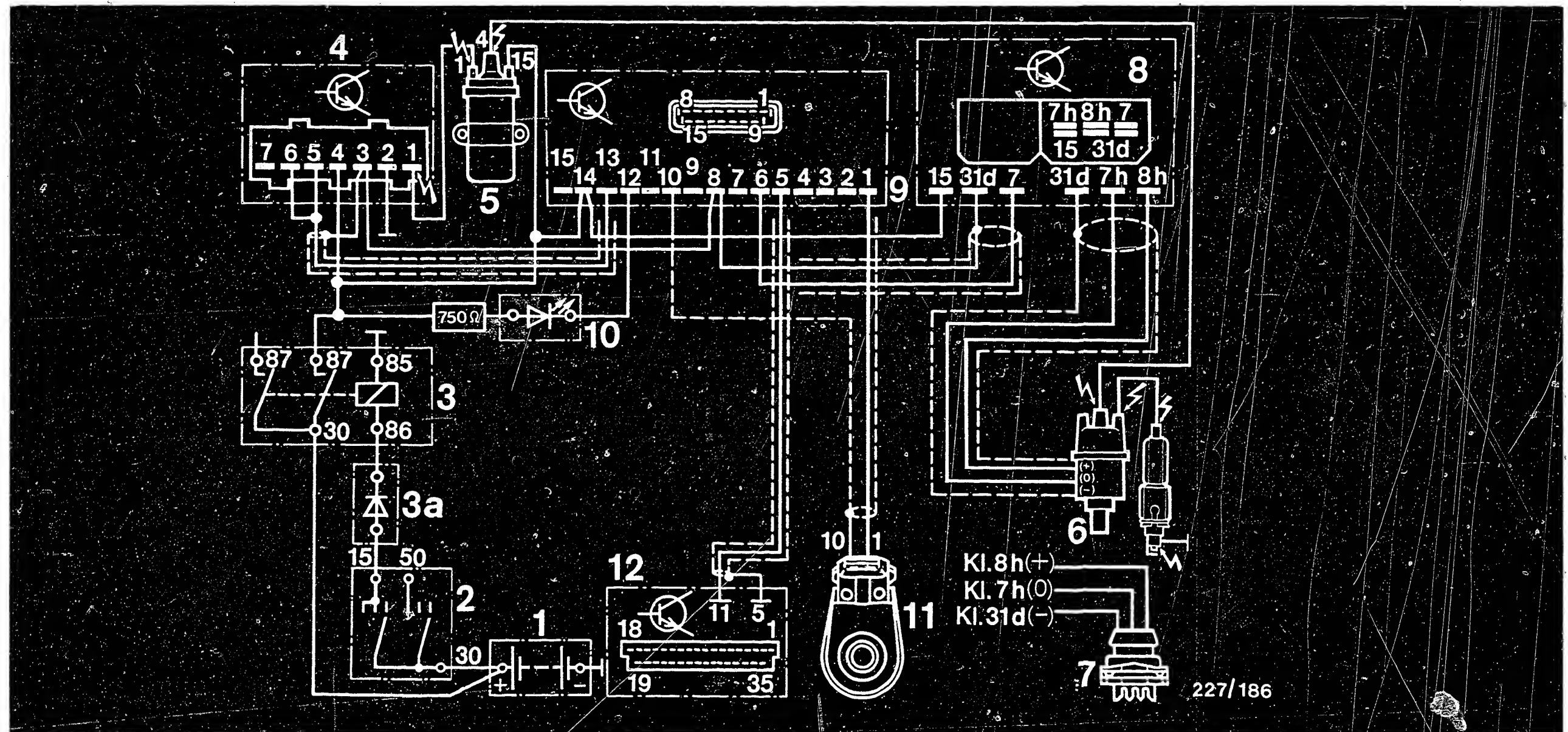


If, while testing the ignition system or during adjustment work on the engine (e.g. carburettor), it becomes necessary to switch on the ignition (switch on the ignition or voltage source), the above-mentioned dangerous voltages occur over the entire system.

The danger of accident exists, therefore, not only on the individual assemblies of the ignition system (e.g. ignition distributor, ignition coil, trigger box, ignition harness), but also on the wiring harness (e.g. tachometer connection, diagnostic plug), at plug-in connections and test equipment.







**⚡** = Dangerous voltages  
(400 V-25kV)

- 1 = Battery
- 2 = Ignition and starting switch
- 3 = Power-supply relay
- 3a = Reversed-polarity protection diode

- 4 = Trigger box
- 5 = Ignition coil
- 6 = Ignition distributor
- 7 = Ignition distributor connector

- 8 = Ignition timing unit
- 9 = Knock control unit
- 10 = Indicator lamp
- 11 = Knock sensor
- 12 = L-Jetronic control unit

### Electrical terminal diagram

The dangerous locations are marked with danger arrows taking the example of the terminal diagram of an electronic ignition system.

**A21**

Danger of accidents  
Peugeot.



**A22**

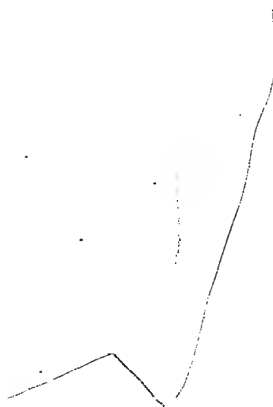
Danger of accidents  
Peugeot



6. Incorrect indication of engine speed, dwell angle and ignition point

In ignition systems with trigger box 0 227 100 111 (TZ-I) with current limitation there may be an incorrect indication of engine speed, dwell angle and ignition point on testers.

For further information see Coordinates L 9 - L 13.



## 7. Important vehicle information

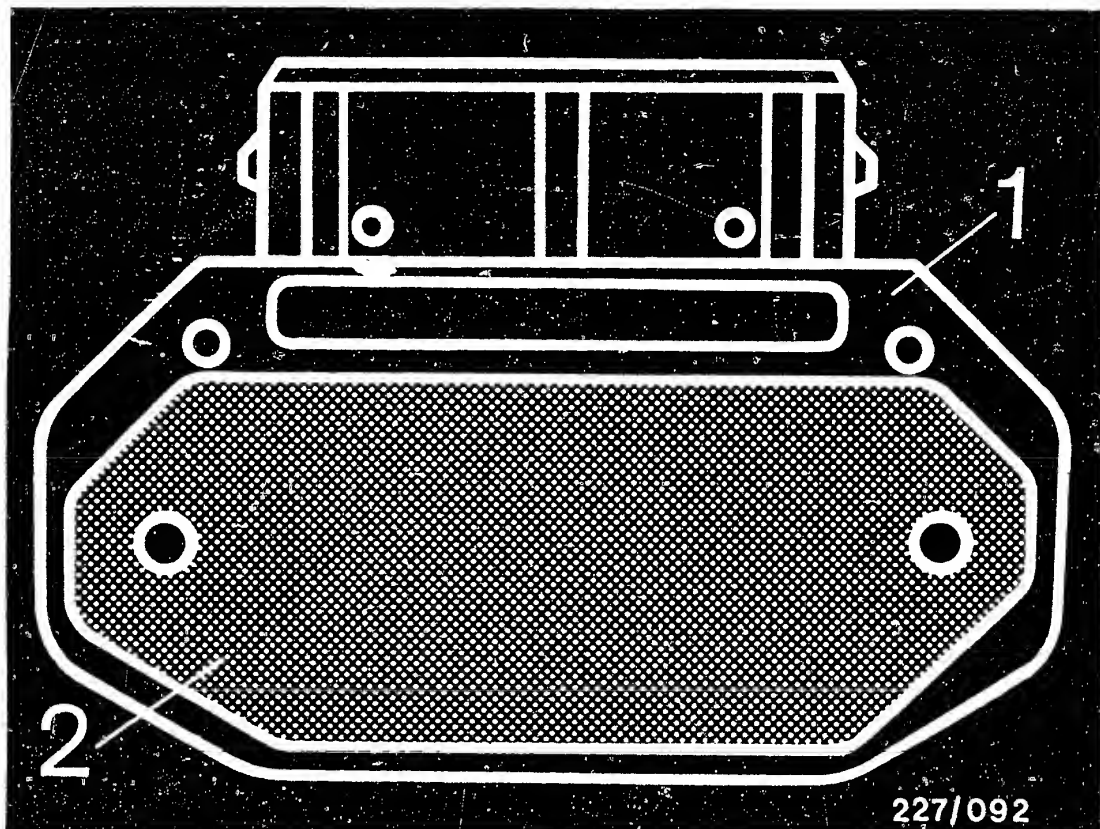
- Resistance measurements must only be performed with the ignition switched off or with the battery disconnected (measuring instrument defective).
- During the compression test, either pull off the trigger-box plug or firmly connect terminal 4 of the ignition coil to ground using an extra cable (dangerous voltages, insulation damage at ignition coil, ignition distributor, ignition harness).

### Note:

The extra cable must be suppressed with at least 2 k $\Omega$ , e.g. with sleeve-type suppressor (5 k $\Omega$ ) 0 356 500 001.

- The specified ignition coil (see Part No.) must not be replaced with a different ignition coil.
- No suppression capacitor must be connected to ignition coil terminal 1 and terminal 15.
- Ignition coil terminal 1 must not be brought into contact with ground as a theft-proofing measure (ignition coil will be destroyed when ignition is switched on).
- No battery + and no test lamp may be connected to ignition coil terminal 1 (trigger box will be destroyed).
- Ignition cable from ignition coil terminal 4 to ignition distributor terminal 4 must not be disconnected during operation.
- There must be no arcing from ignition coil terminal 4 to ignition coil terminal 1 and 15. The magnetic pickup assembly and the trigger box may be destroyed.





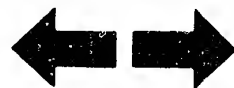
1 = Trigger box

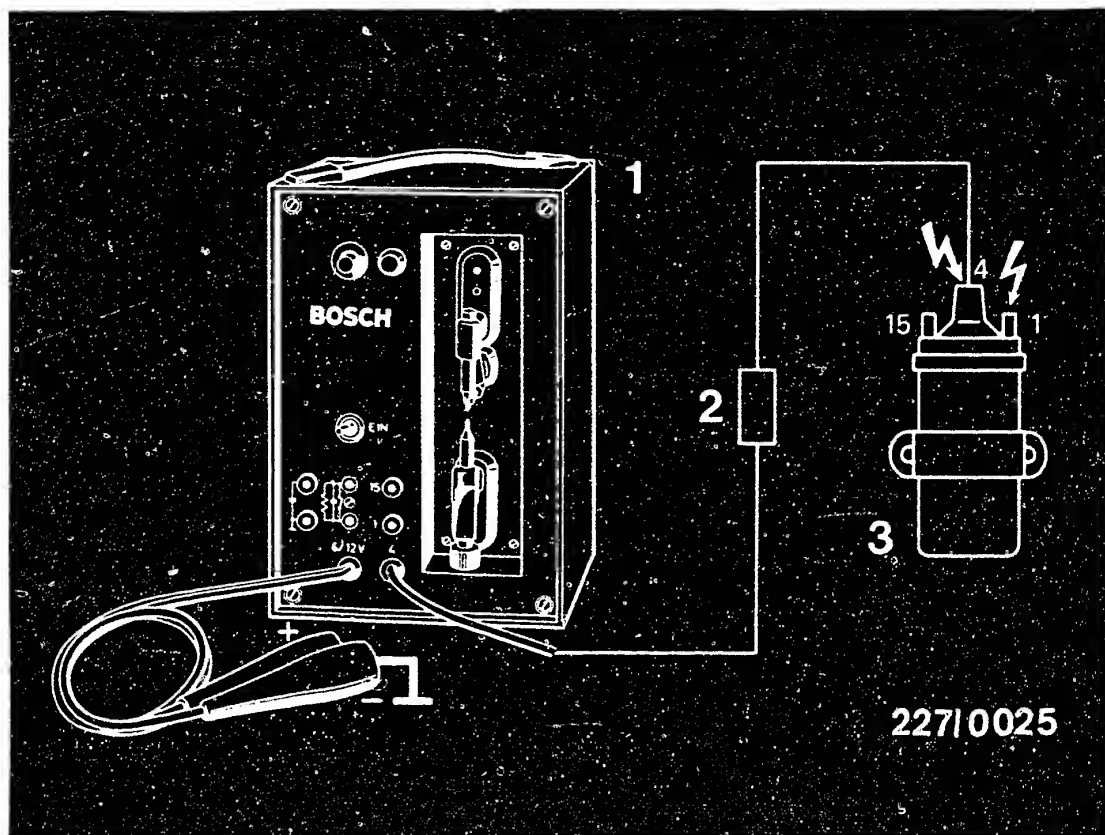
2 = Base plate

- Before mounting the trigger box, the base plate must be coated with thermal conduction paste. Apply thermal conduction paste only with a suitable object (screwdriver, matchstick etc.). Do not apply thermal conduction paste to painted parts.

**B1**

Important vehicle information  
Peugeot





- 1 = Spark gap
- 2 = 5 kΩ sleeve-type suppressor
- 3 = Ignition coil

⚡ = Dangerous voltages (400 V - 25 kV)

- In order to prevent the trigger box from being irreparably damaged, when using a spark gap, an interference-suppression resistor of at least 2 kΩ must be connected between the spark gap and ignition coil terminal 4, e.g. sleeve-type suppressor (5 kΩ) 0 356 500 001.

**B2**

Important vehicle information

Peugeot



- In order to prevent the trigger box from being irreparably damaged, the secondary side of the ignition system must have at least 2 k $\Omega$  interference suppression whereby the original distributor rotor with 1 k $\Omega$  interference-suppression resistor must be fitted (even in the case of radio and spark interference suppression do not use a 5 k $\Omega$  distributor rotor).
- No external voltage, e.g. ohmmeter, may be connected to the ignition distributor magnetic pickup assembly (Hall generator). Caution when switching measuring ranges.
- The lines from the Hall generator to the trigger box must be laid separately from other lines. The distance between the Hall generator lines and the H.T. ignition cables and the line from terminal 1 of the trigger box to terminal 1 of the ignition coil must be at least 100 mm (Hall generator will be destroyed).
- The line from the Hall generator to the ignition timing unit and from the ignition timing unit to the trigger box must be screened (negative effect on operation of ignition timing unit and trigger box).
- The holding springs of the distributor cap must not drop into the pickup system when the engine is being cranked and with the dust-protection cover removed.
- Arcing or breakdown of insulation on the distributor cap (poor insulation) may lead to the destruction of the magnetic pickup assembly and trigger box.
- Do not disconnect the battery with the engine running.
- Do not use a starting aid with more than 16 V or a fast charger for starting.



- The knock sensor lead must be screened and laid separately from high-tension cables..
- Install the knock sensor fastening screw without plain washer, spring lock washer, tooth lock washer etc. Secure the fastening screw only with locking paint.





## 8. Trouble-shooting program

### 8.1 Procedure for trouble-shooting chart

The trouble-shooting chart starting on Coordinate C3 is divided into the following sections:

"Trouble-shooting for ignition" and "Trouble-shooting for knock control".

The chart contains symptoms of the trouble, cause of the trouble, test instructions and coordinate references. Select the possible cause of the trouble in the trouble-shooting chart in accordance with the customer complaint (symptom of trouble).

If the cause of the trouble is unclear, start testing with the detailed, self-contained trouble-shooting program starting on Coordinate C13.

If the cause of the trouble has been clearly diagnosed in accordance with the trouble-shooting chart, then direct trouble-shooting is possible by going to the coordinate given on the right without having to go through the entire trouble-shooting program for each fault. If there is no coordinate given on the right, carry out trouble-shooting in accordance with the "test instructions" column.

### 8.2 Procedure for trouble-shooting program

The trouble-shooting program starting on Coordinate C 13 is divided into 3 rows of boxes.

The left-hand row contains test instructions and test specifications.

The center row contains repair instructions.

The right-hand row contains the illustrations/terminal diagrams belonging to the text and the explanation of the items in the picture.

If the questions asked in the left-hand row can be answered conclusively with "yes", then proceed to the next test down.

If the answer to the question is "no", branch to the center row and carry out the tests given there.

### 8.3 Test conditions

Battery fully charged, fuel system O.K., engine mechanically O.K. (e.g. compression, valve clearance etc). Ambient temperature/ignition system temperature 0° to 100 °C (temperature has a considerable effect on measured values).

**C1**

Trouble-shooting program

Peugeot



**C2**

Trouble-shooting program

Peugeot



# Trouble-shooting for ignition (with ignition coil, ignition distributor, trigger box and ignition timing unit)

## Customer complaint (symptom of trouble)

1. Starting motor operates, but engine fails to start

2. Rough idling

3. Poor throttle response

4. Engine lacks power

5. Misfiring

6. Fuel consumption too high

7. Engine pings when accelerating

8. Backfiring

9. Engine overheats

									Cause of trouble	Test instructions	Coordinate
●	●	●	●	●	●	●	●	●	Unclear	Carry out detailed trouble-shooting	C 13
●	●	●	●	●	●		●		Spark plugs defective	Assess using ignition oscillogram or remove spark plug and make visual examination.	----
●	●	●	●	●	●	●	●	●	Basic ignition setting incorrect	To prevent incorrect adjustment, be sure to test in accordance with instructions.	C 21 - D 18
●	●	●	●	●					Shunt on secondary side	Assess ignition coil, ignition distributor, ignition harness and spark plug using ignition oscillogram or make visual examination	----
●	●	●	●	●					Open circuit on secondary side	Assess ignition coil, ignition distributor, ignition harness and spark plug using ignition oscillogram, or test for continuity using ohmmeter	----
●									Open circuit on primary side	-	F 19
●	●	●	●	●					Ignition coil defective	-	C 15

**C3**

Trouble-shooting program

Peugeot



**C4**

Trouble-shooting program

Peugeot



# Trouble-shooting for ignition (with ignition coil, ignition distributor, trigger box and ignition timing unit)

## Customer complaint (symptom of trouble)

1. Starting motor operates, but engine fails to start

2. Rough idling

3. Poor throttle response

4. Engine lacks power

5. Misfiring

6. Fuel consumption too high

7. Engine pings when accelerating

8. Backfiring

9. Engine overheats

									Cause of trouble	Test instruction	Coordinate
		●	●	●	●				Interference-suppression resistors defective	Assess using ignition oscillogram or perform resistance measurement	----
	●	●	●	●	●				Ignition timing unit defective/ spark advance incorrect	Be sure to test in accordance with instructions	C 21 - D20
●									Ignition timing unit pulse in- correct	-	F 13
		●	●		●	●		●	Vacuum/overpressure advance defective	See Autodata test specifications	----
●									Trigger box defective	-	E 1
●									Ignition distributor pulse generator defective	-	F 11
●									Trigger box control line defective	-	F 17
●									Firing sequence incorrect	1 - 3 - 4 - 2	----
●									Knock control defective	Trouble-shooting for knock control	C 7 - C 12

**C5**

Trouble-shooting program

Peugeot



**C6**

Trouble-shooting program

Peugeot



# Trouble-shooting for knock control (with indicator lamp, knock sensor, knock control unit and L-Jetronic control unit)

## Customer complaint (symptom of trouble)

1. Starting motor operates but engine fails to start

2. Indicator lamp continuously lit, even after journey with ignition on

3. Indicator lamp not lit before starting with ignition on

4. Indicator lamp flashes only under load

5. Indicator lamp flashes after driving under load even when idling

6. Indicator lamp flickers occasionally only under load

7. Indicator lamp flickers occasionally under load and at idle

8. Engine idle speed unstable

9. Engine knocking, ignition not being retarded

									Cause of trouble	Test instructions	Coordinate
●	●	●	●	●	●	●	●	●	Unclear	Carry out detailed trouble-shooting	C 13
●									Ignition system defective	Trouble-shooting for ignition	C 3 - C 6
●									Knock control unit defective	-	F 15
●									Knock control unit has no power supply	-	F 7 - F 10
	●								Knock control unit defective, indicator lamp/connecting lead shorting to ground	-	C 21 - D 2
		●							Knock control unit defective, indicator lamp defective, indicator lamp has no power supply	-	C 21 - D 2
		●							Knock control unit has no power supply	-	F 7 - F 10
			●						Knock sensor connecting lead defective	-	D 11
			●						Knock control unit voltage < 9 V	-	D 12
			●						Knock sensor defective, knock sensor incorrectly installed	-	D 14
			●						Knock control unit defective	-	D 16

**C7**

Trouble-shooting program

Peugeot



**C8**

Trouble-shooting program

Peugeot



Trouble-shooting for knock control (with indicator lamp, knock sensor, knock control unit and L-Jetronic control unit)  
Customer complaint (symptom of trouble)

1. Starting motor operates but engine fails to start
2. Indicator lamp continuously lit, even after journey with ignition on
3. Indicator lamp not lit before starting with ignition on
4. Indicator lamp flashes only under load
5. Indicator lamp flashes after driving under load even when idling
6. Indicator lamp flickers occasionally only under load
7. Indicator lamp flickers occasionally under load and at idle
8. Engine idle speed unstable
9. Engine knocking, ignition not being retarded

									Cause of trouble	Test instructions	Coordinate
				●					ti injection signal incorrect	-	D 3 - D 10
				●					Knock control unit voltage < 9 V	-	D 12
				●					Knock sensor defective, knock sensor in- correctly installed	-	D 14
				●					Knock sensor connecting lead defective	-	D 14
				●					Knock control unit defective	-	D 16
					●				Knock sensor connecting lead has loose contact	-	D 14
					●				Knock control unit defective	-	D 16
					●				Ignition overadvanced	-	D 18
					●				Engine overheating, engine cooling defective	Check coolant, V-belt, thermostat etc.	----
					●				Charge-air pressure control defective	Test charge-air pressure control	----
					●				Abnormal engine noises leading to detection of knocking	Engine not mechanically O.K. (bearing damage, valve spring broken etc.)	----



Trouble-shooting for knock control (with indicator lamp, knock sensor, knock control unit and L-Jetronic control unit)  
Customer complaint (symptom of trouble)

1. Starting motor operates but engine fails to start
2. Indicator lamp continuously lit, even after journey with ignition on
3. Indicator lamp not lit before starting with ignition on
4. Indicator lamp flashes only under load
5. Indicator lamp flashes after driving under load even when idling
6. Indicator lamp flickers occasionally only under load
7. Indicator lamp flickers occasionally under load and at idle
8. Engine idle speed unstable
9. Engine knocking, ignition not being retarded

									<u>Cause of trouble</u>	<u>Test instructions</u>	<u>Coordinate</u>
						●			ti injection signal incorrect, knock control unit defective, L-Jetronic control unit defective	-	D 3 - D 10
							●		ti injection signal incorrect	-	D 3 - D 10
								●	ti injection signal incorrect, L-Jetronic control unit defective, knock control unit defective	-	D 3 - D 10



Test primary signal.

If no oscilloscope or tachometer is available, check whether there is an ignition spark across the spark gap.

Primary signal with oscilloscope.

Connect oscilloscope to ignition coil as per operating instructions. Start the engine. Oscilloscope must show a primary voltage (of any value).

Primary signal with tachometer.

Connect tachometer to ignition coil as per operating instructions. Start the engine. Tachometer must indicate a value (any value).

Ignition spark with spark gap.

Disconnect ignition cable term. 4 from ignition coil.

Connect spark gap including sleeve-type suppressor (5 k $\Omega$ ) to ignition coil.

Adjust spark gap to 5 mm.

Start the engine.

There must be sparks across the spark gap.

Primary signal present or ignition sparks across spark gap?

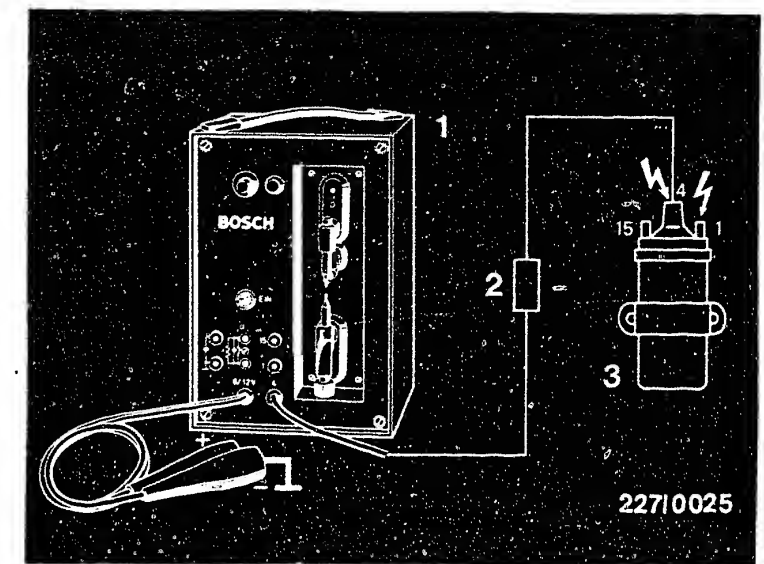
yes

Continued on C 15 / C 16

nc

If no primary signal or no ignition spark, continue testing at F1.

Tests as from C 15 not necessary.



- 1 = Spark gap
- 2 = 5 k $\Omega$  sleeve-type suppressor
- 3 = Ignition coil

⚡ = Dangerous voltages

**C13**

Trouble-shooting program

Peugeot



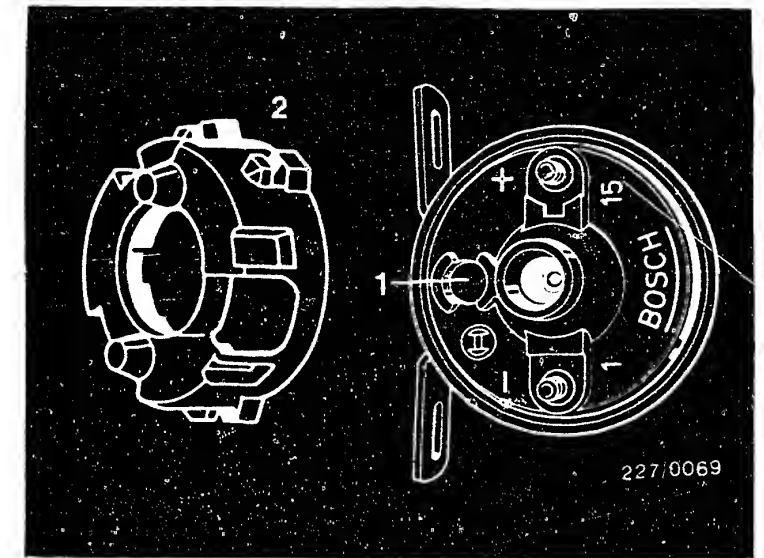
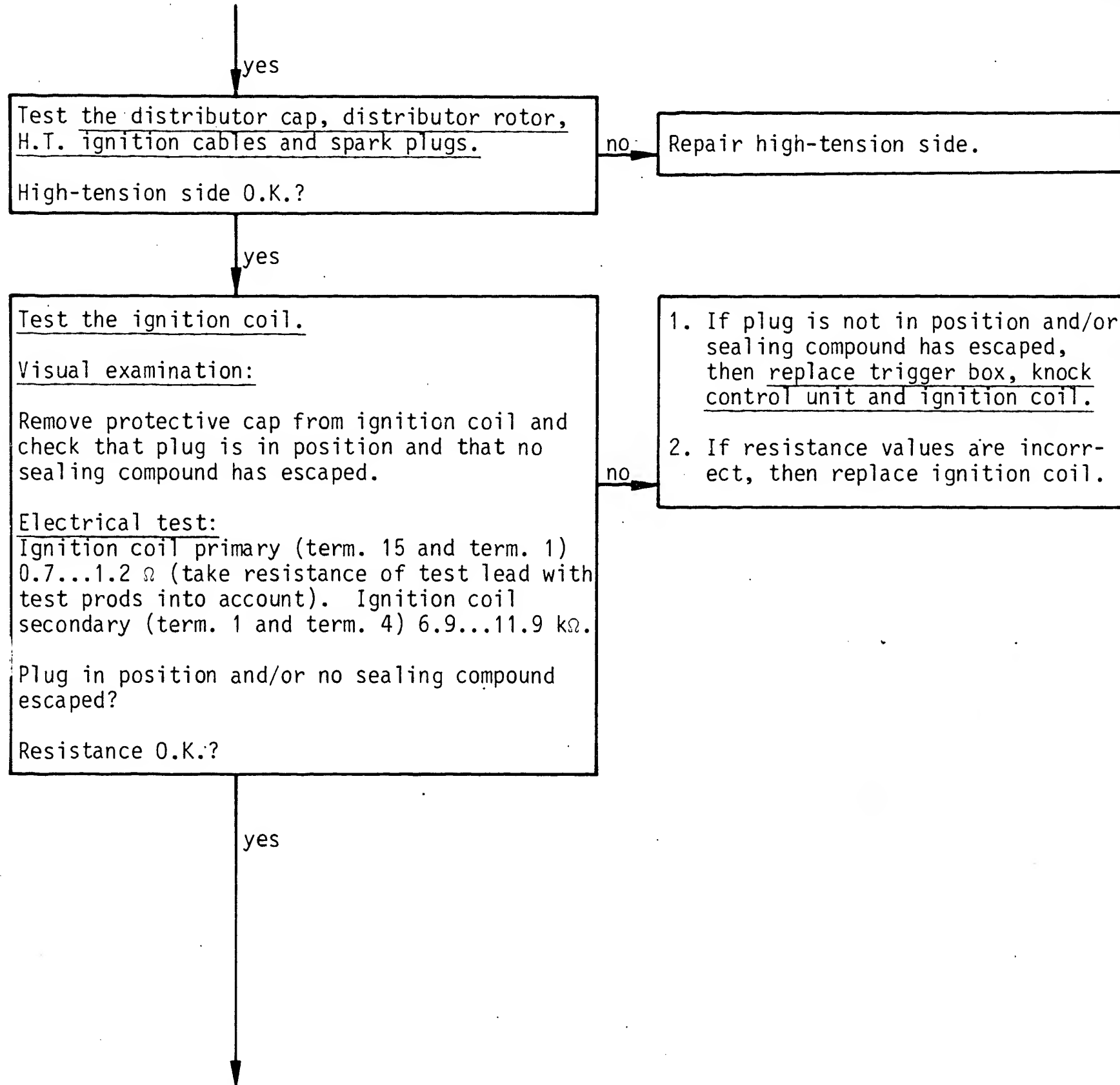
**C14**

Trouble-shooting program

Peugeot







1 = Plug  
2 = Protective cap

Continued on C 17 / C 18

**C15**

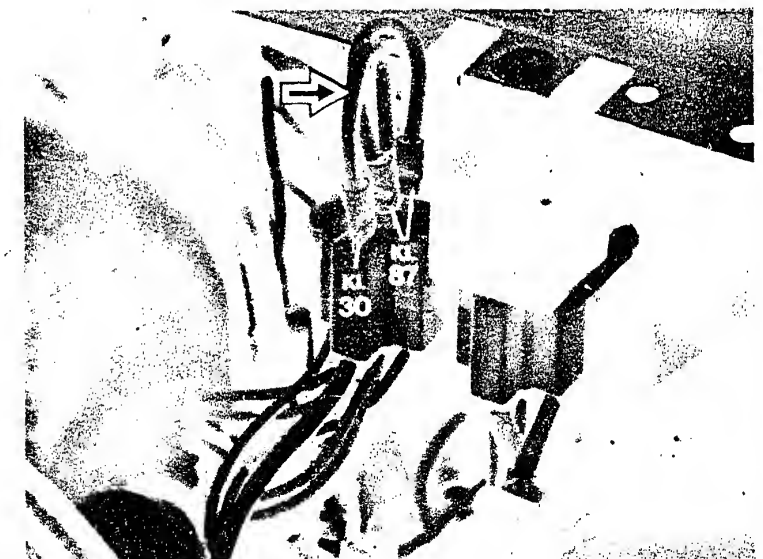
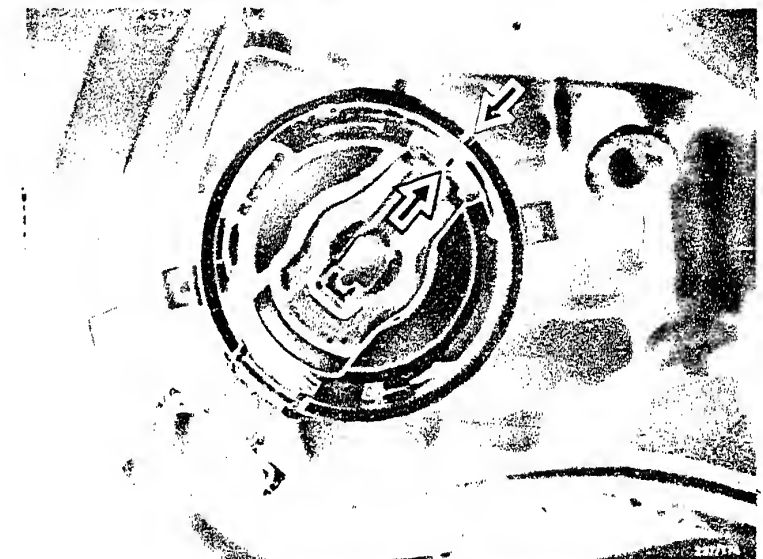
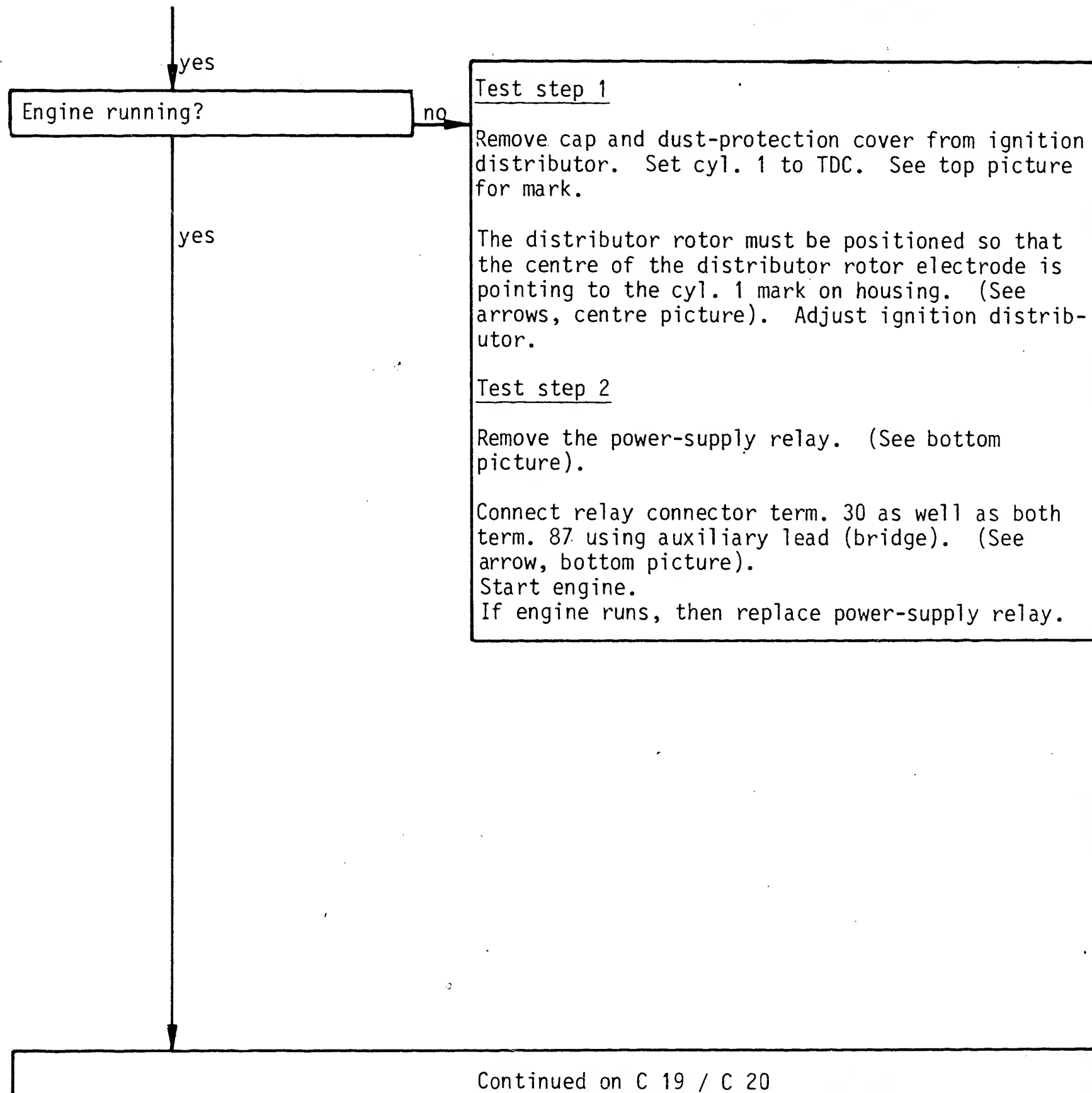
Trouble-shooting program  
Peugeot



**C16**

Trouble-shooting program  
Peugeot





Continued

### Test step 3

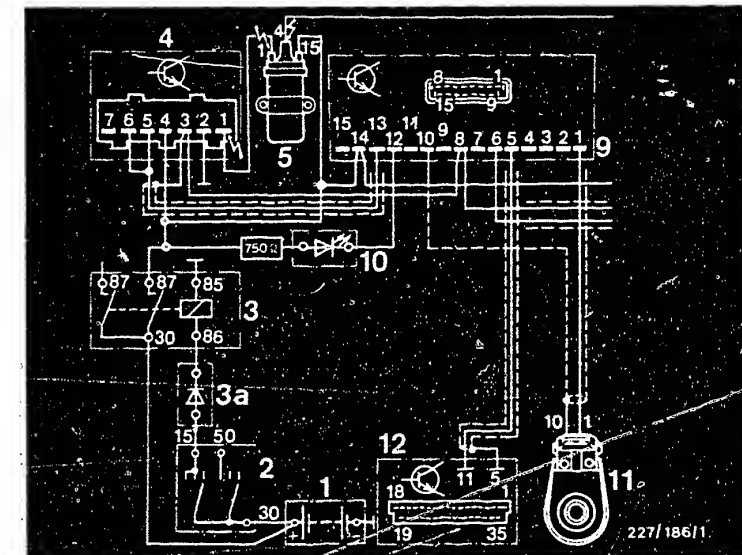
Disconnect the negative and positive cables from the battery. Disconnect the trigger-box plug. Switch on the ignition.

Check for contact resistance in cables from positive battery terminal to trigger-box plug term. 4 including cables from negative battery terminal to trigger-box plug term. 2. Total contact resistance max.  $0.3 \Omega$  (take resistance of test lead with test prods into account). Eliminate contact resistance.

Check for contact resistance in cables from positive battery terminal to ignition coil term. 15 as well as in cable from ignition coil term. 1 to trigger-box plug term. 1. Total contact resistance max.  $0.3 \Omega$  (take resistance of test lead with test prods into account). Eliminate contact resistance.

If test steps 1, 2 and 3 O.K., then replace trigger box.

yes



Section from terminal diagram

- 1 = Battery
- 2 = Ignition and starting switch
- 3 = Power-supply relay
- 3a = Reversed-polarity protection diode
- 4 = Trigger box
- 5 = Ignition coil
- 9 = Knock control unit
- 10 = Indicator lamp
- 11 = Knock sensor
- 12 = L-Jetronic control unit
- ⚡ = Dangerous voltages (400 V - 25 kV)

Continued on C 21 / C 22

**C 19**

Trouble-shooting program  
Peugeot



**C 20**

Trouble-shooting program  
Peugeot



Test the indicator lamp

1. Switch on the ignition (do not start engine). Indicator lamp in instrument panel must light up.

2. Start engine and operate at idle. Indicator lamp must go out.

Did indicator lamp light up and go out at idle?

yes

1. Indicator lamp not lighting up

Remove knock control unit.  
Remove knock control unit plug.  
Connect knock control unit plug term. 12 to ground using auxiliary lead and test prod.

Switch on ignition.

Indicator lamp must light up.  
If indicator lamp lights up, then replace knock unit.

If indicator lamp does not light up, then remove instrument panel and connect voltmeter to indicator lamp term. 15 and ground. Voltmeter must indicate approx battery voltage. If battery voltage not indicated, then check for open circuit in leads from ignition and starting switch term. 15 to indicator lamp term. 15 including resistor (750  $\Omega$ ).

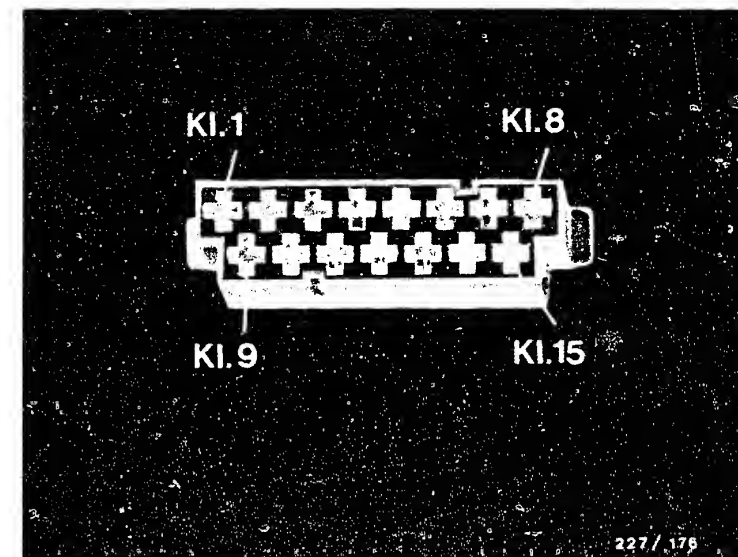
Eliminate open circuit.

Connect voltmeter to positive battery terminal and indicator lamp term. 12. Voltmeter must indicate battery voltage.

If battery voltage not indicated, then check for open circuit in lead from indicator lamp term. 12 to knock control unit plug term. 12. Eliminate open circuit.

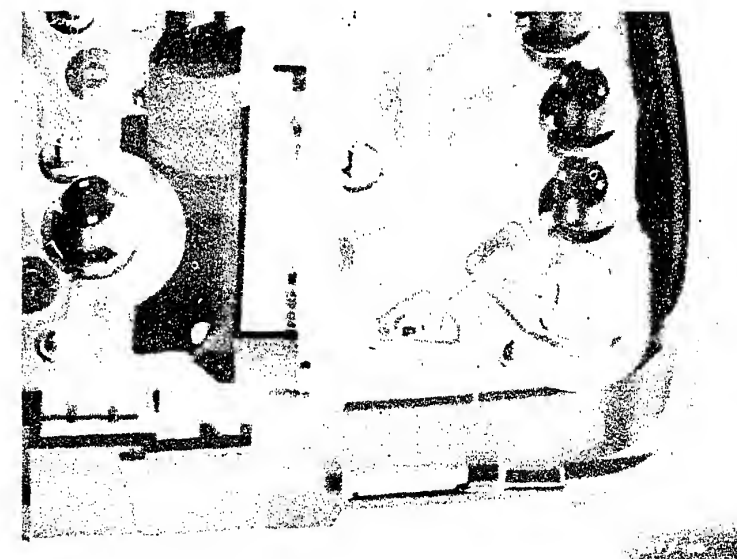
If no open circuit, then replace indicator lamp.

Continued on D 1 / D 2



Knock control unit plug

1 = Indicator lamp  
2 = 750  $\Omega$  resistor



Continued

## 2. Indicator lamp lit continuously

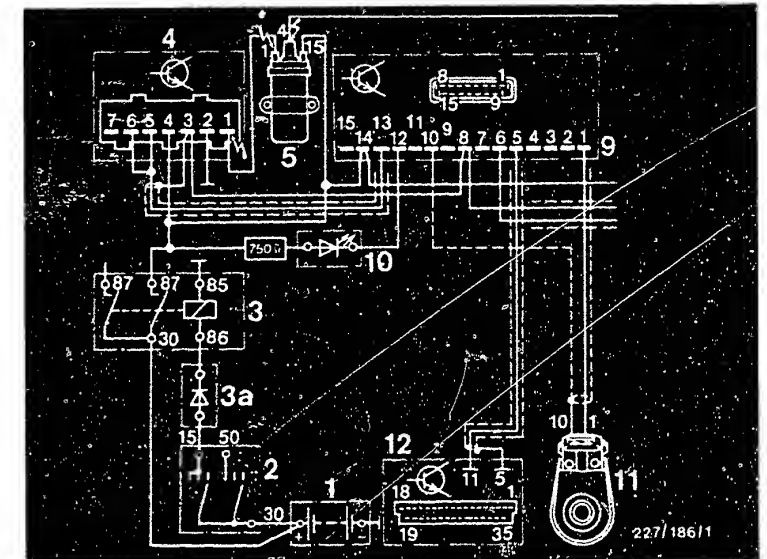
Remove knock control unit.  
Remove knock control unit plug.  
Switch on ignition.

If indicator lamp no longer lit, then replace  
knock control unit.

If indicator lamp lit, then short circuit to  
ground in indicator lamp or connecting lead  
term. 12.  
Eliminate short circuit to ground.

yes

Continued on D 3 / D 4



### Section from terminal diagram

- 1 = Battery
- 2 = Ignition and starting switch
- 3 = Power-supply relay
- 3a = Reversed-polarity protection diode
- 4 = Trigger box
- 5 = Ignition coil
- 9 = Knock control unit
- 10 = Indicator lamp
- 11 = Knock sensor
- 12 = L-Jetronic control unit
- ⚡ = Dangerous voltages (400 V - 25 kV)

D1

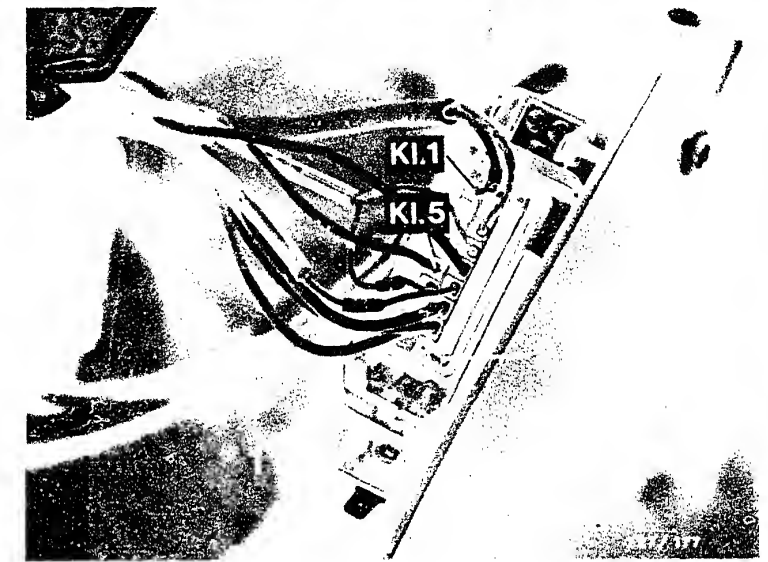
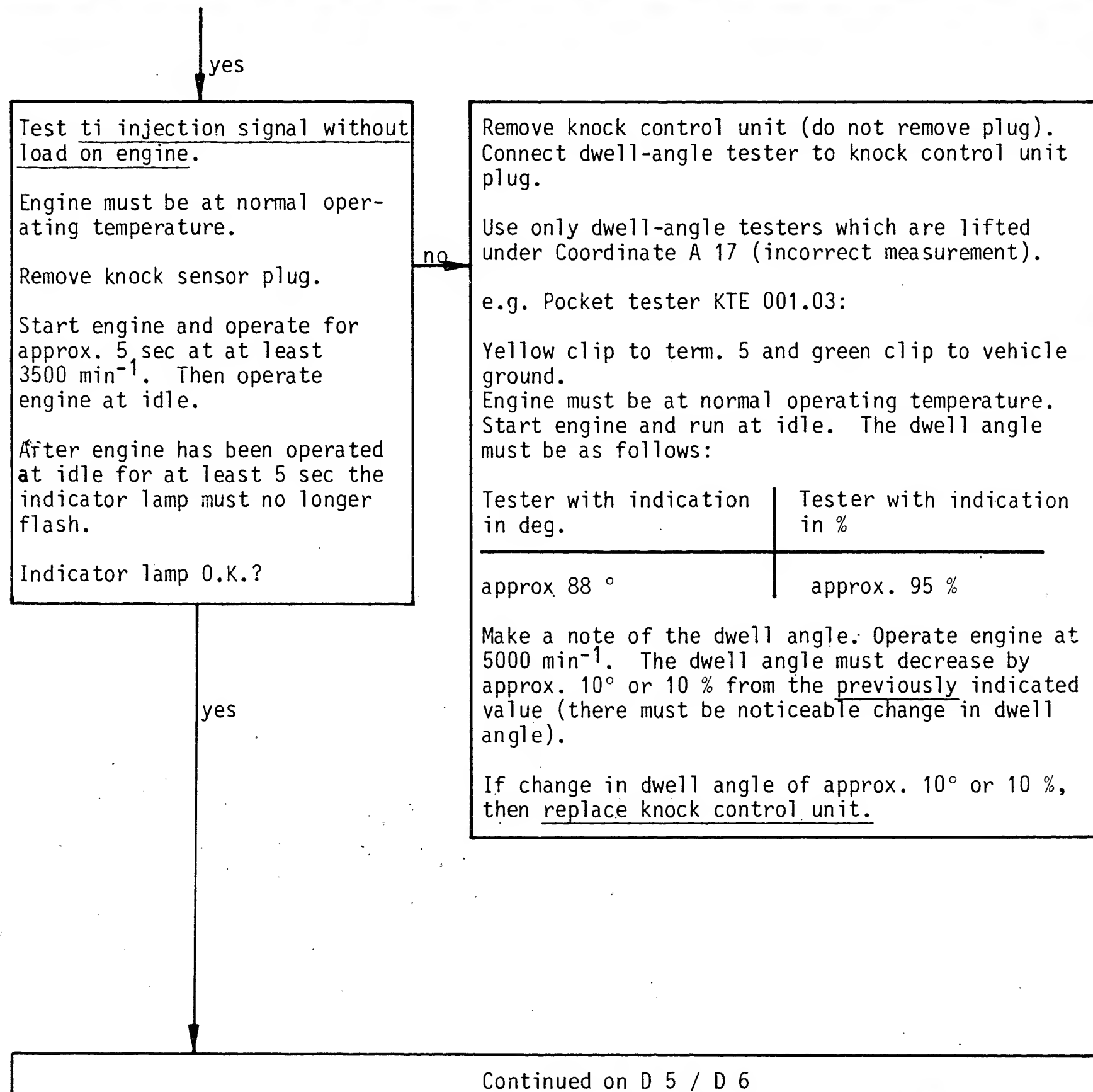
Trouble-shooting program  
Peugeot



D2

Trouble-shooting program  
Peugeot





1 = Knock control unit  
2 = Knock control unit plug



Continued

If the indicated dwell angle at idle and 5000 min<sup>-1</sup> was approx. 0° or 0 %, then

1. Remove the L-Jetronic control unit. Remove plugs from knock control unit and L-Jetronic control unit.

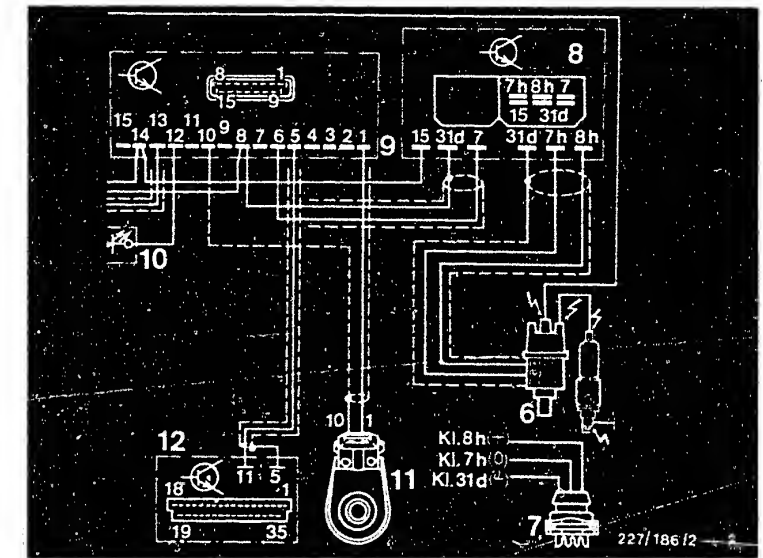
Connect ohmmeter to knock control unit plug term. 5 and L-Jetronic control unit plug term. 11. Ohmmeter must indicate continuity. Otherwise eliminate open circuit.

2. Connect ohmmeter to L-Jetronic control unit plug term. 11 and vehicle ground.

Ohmmeter must not indicate continuity. If continuity is indicated, then eliminate short circuit to ground in L-Jetronic control unit lead term. 11.

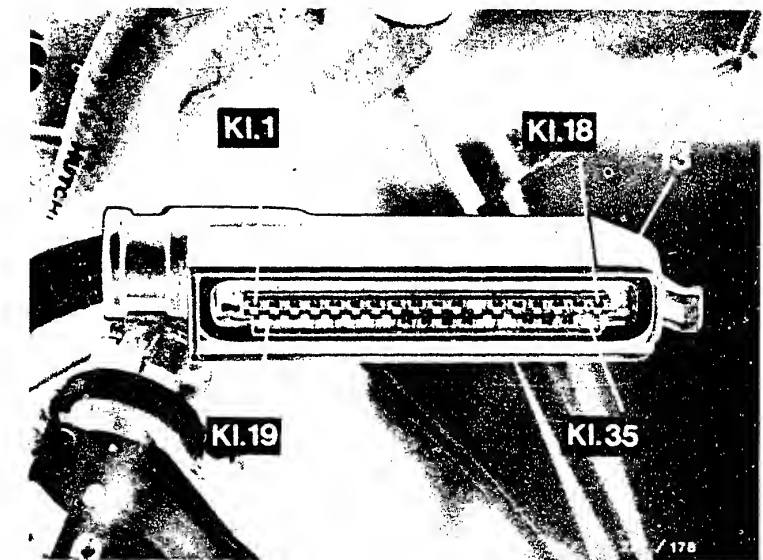
yes

Continued on D 7 / D 8



Section from terminal diagram

- 6 = Ignition distributor
- 7 = Ignition distributor connector
- 8 = Ignition timing unit
- 9 = Knock sensor
- 10 = Indicator lamp
- 11 = Knock sensor
- 12 = L-Jetronic control unit
- 13 = L-Jetronic control unit plug



D5

Trouble-shooting program  
Peugeot



D6

Trouble-shooting program  
Peugeot





Continued

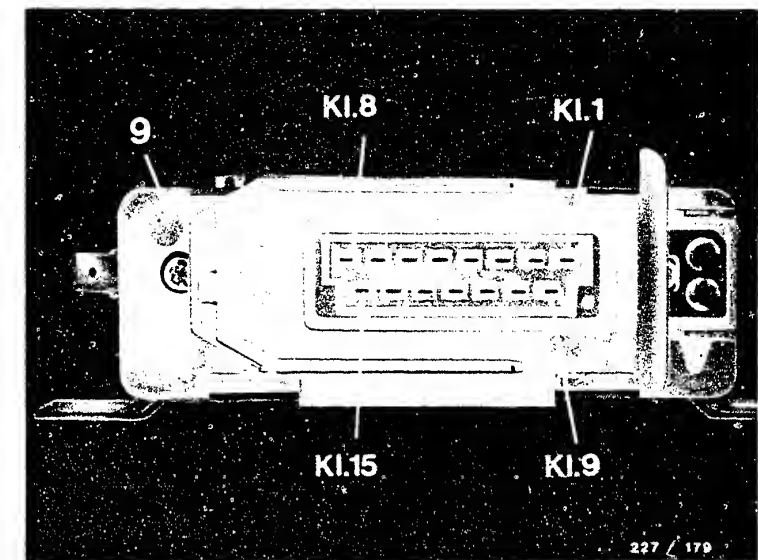
3. Connect ohmmeter to knock control unit term. 5 and term. 8.

Ohmmeter must indicate 47...72 k $\Omega$ .

If the resistance is not correct, then replace knock control unit.

If the resistance is correct, then replace L-Jetronic control unit.

yes



9 = Knock control unit

Continued on D 9 / D 10

**D7**

Trouble-shooting program  
Peugeot



**D8**

Trouble-shooting program  
Peugeot



yes

Test ti injection signal with engine under load.

Engine must be at normal operating temperature.

Remove knock sensor plug.

Remove top part of air filter and air filter element. (See top picture, arrow).

Start engine and operate at  $5000 \text{ min}^{-1}$ .  
Maintain accelerator position during following measurement.

Get 2nd person to open air-flow sensor flap all the way using a suitable object (screwdriver or similar).  
(See bottom picture).

Note:

As a result of overenrichment there will be a sharp drop in engine speed, possibly with the engine stopping.

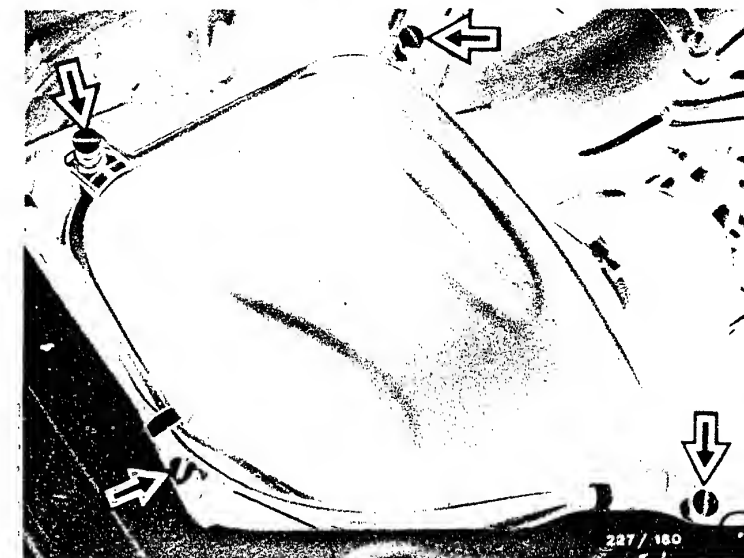
Indicator lamp must flash above  $1000 \text{ min}^{-1}$ .

Indicator lamp O.K.?

yes

Continued on D 11

no  
Replace L-Jetronic control unit.



1 = Top part of air filter

1 = Air-flow sensor  
2 = Sensor flap (fully opened)



**D9**

Trouble-shooting program

Peugeot

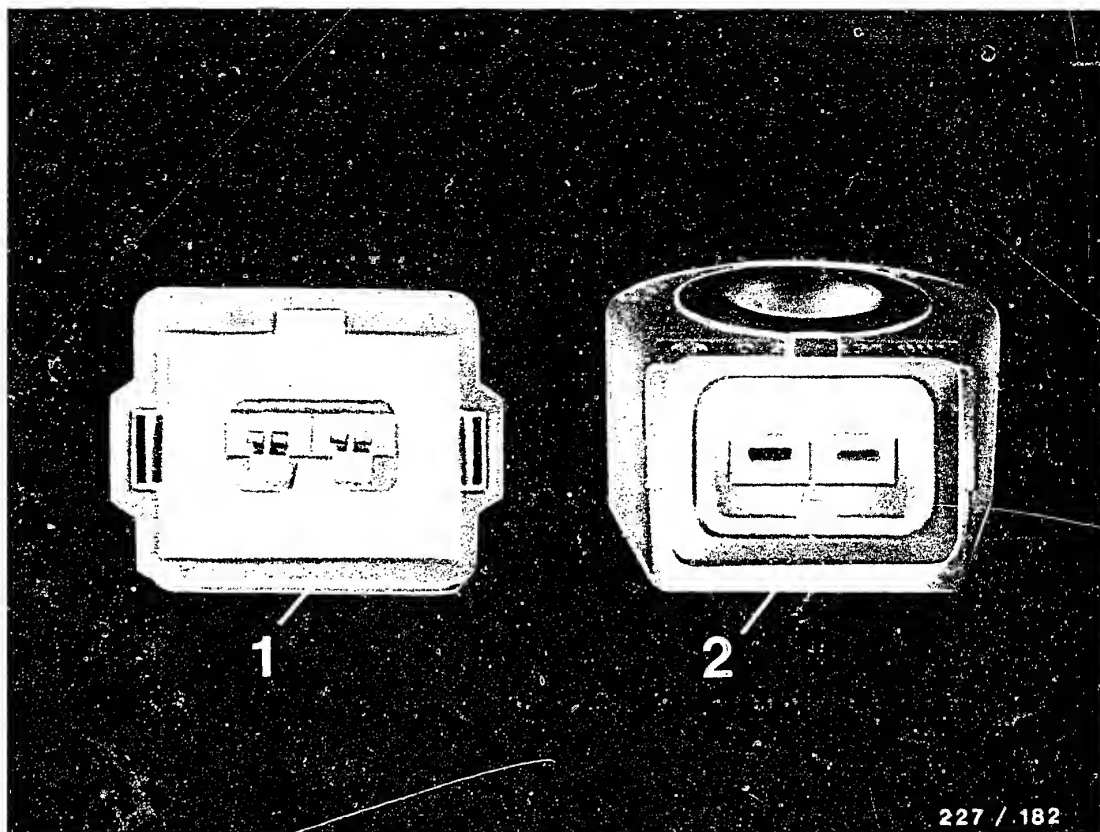


**D10**

Trouble-shooting program

Peugeot





1 = Knock sensor plug      2 = Knock sensor socket

yes

Test knock sensor plug and socket.

Visual examination:

Remove knock sensor plug.

Check contacts of knock sensor plug and socket for oxidation. - Eliminate oxidation.

Reconnect knock sensor plug.

If customer complaint not yet eliminated, then continue testing.

yes

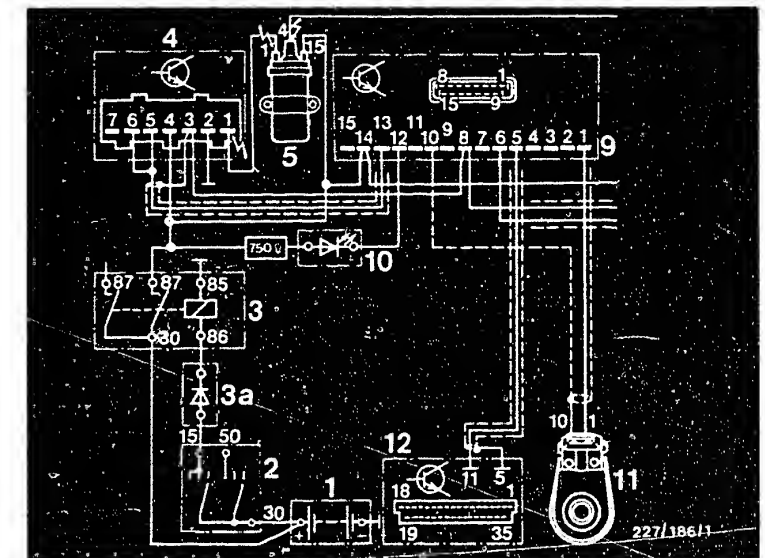
Continued on D 12 / D 13

**D11**

Trouble-shooting program

Peugeot





Section from terminal diagram

- 1 = Battery
- 2 = Ignition and starting switch
- 3 = Power-supply relay
- 3a = Reversed-polarity protection diode
- 4 = Trigger box
- 5 = Ignition coil
- 9 = Knock control unit
- 10 = Indicator lamp
- 11 = Knock sensor
- 12 = L-Jetronic control unit
- ⚡ = Dangerous voltages (400 V - 25 kV)

Test knock control unit voltage supply.

Remove knock control unit (do not remove plug).

Connect voltmeter to knock control unit plug term. 14 (+) and term. 8 (-).

Run engine at idle ( $> 500 \text{ min}^{-1}$ )

The voltmeter must indicate 9 V to battery voltage.

Voltage O.K.?

no

1. Connect voltmeter (+) to positive battery terminal and knock control unit plug term. 14 (-). Switch on ignition and run engine at idle. The voltage drop may be max. 0.5 V. Eliminate voltage drop between positive battery terminal and knock control unit plug term. 14.

2. Connect voltmeter (-) to negative battery terminal and knock control unit plug term. 8 (+). Switch on ignition and run engine at idle. The voltage drop may be max. 0.5 V. Eliminate voltage drop between negative battery terminal and knock control unit plug term. 8.

yes

Continued on D 14 / D 15

**D12**

Trouble-shooting program  
Peugeot



**D13**

Trouble-shooting program  
Peugeot



yes

Test knock sensor monitoring.

Knock control unit plug and knock sensor plug connected.

Connect knock control unit plug term. 5 to ground using auxiliary lead and test prod.

Start engine and run at at least 3500 min<sup>-1</sup>.

Indicator lamp must not light up.

Indicator lamp O.K.?

no

Remove knock sensor plug and knock control unit plug.

1. Connect ohmmeter to:  

<u>Knock sensor plug</u>		<u>Knock control unit plug</u>
Term. 1	and	Term. 1
Term. 10	and	Term. 10

Ohmmeter must indicate continuity. Otherwise eliminate open circuit.

2. Connect ohmmeter to:  

<u>Knock sensor plug</u>		<u>Knock control unit plug</u>
Term. 1	and	Term. 8

Ohmmeter must indicate open circuit (infinity).  
 If ohmmeter indicates continuity, then eliminate short circuit to ground of knock sensor lead term. 1 to term. 10.

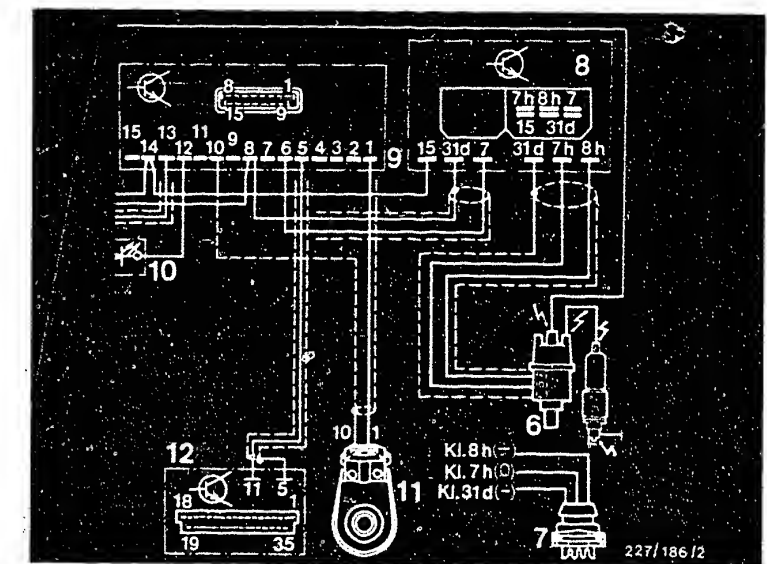
3. Connect knock sensor plug.  
 Connect ohmmeter to:

<u>Knock control unit plug</u>		<u>Knock control unit plug</u>
Term. 1	and	Term. 10

Ohmmeter must indicate 270...330 kΩ.  
 If resistance not correct, then replace knock sensor.

4. Check tightening torque 11...15 Nm of knock sensor fastening screw.

If points 1 to 4 O.K., then replace knock sensor



Section from terminal diagram

- 6 = Ignition distributor
- 7 = Ignition distributor connector
- 8 = Ignition timing unit
- 9 = Knock control unit
- 10 = Indicator lamp
- 11 = Knock sensor
- 12 = L-Jetronic control unit

Continued on D 16 / D 17

**D14**

Trouble-shooting program

Peugeot



**D15**

Trouble-shooting program

Peugeot



yes

Test knock control unit evaluation circuit.

Knock control unit plug and knock sensor plug connected.

Connect knock control unit plug term. 5 to ground using auxiliary lead and test prod.

Start engine and run between 500 and 1600  $\text{min}^{-1}$ .

Caution:

When starting and during testing, 2800  $\text{min}^{-1}$  must not be exceeded, otherwise incorrect measurement.

If 2800  $\text{min}^{-1}$  is exceeded, then switch off ignition and start again.

Indicator lamp must not light up.

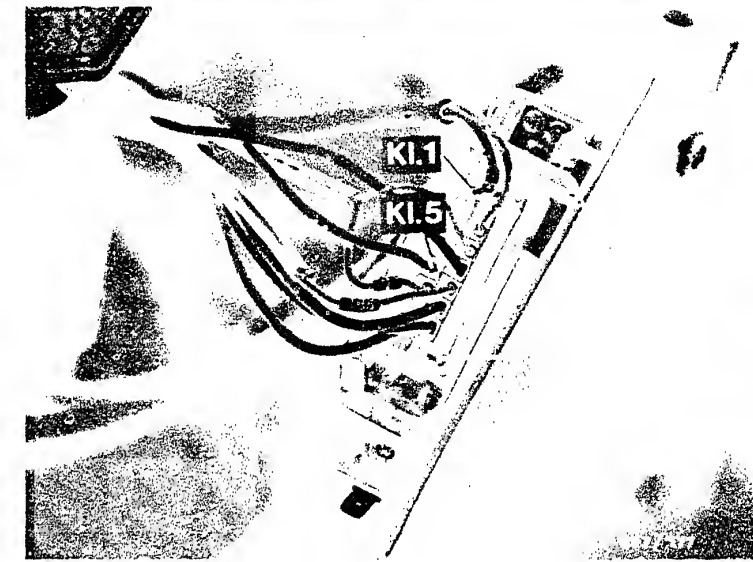
Indicator lamp O.K.?

no

Replace knock control unit.

yes

Continued on D 18 / D 19



1 = Knock control unit

2 = Knock control unit plug

**D 16**

Trouble-shooting program  
Peugeot



**D 17**

Trouble-shooting program  
Peugeot



yes

Test basic ignition setting.

Remove hose from pressure/vacuum advance mechanisms (ignition distributor).

Start engine and run at idle ( $850 - 950 \text{ min}^{-1}$ ).

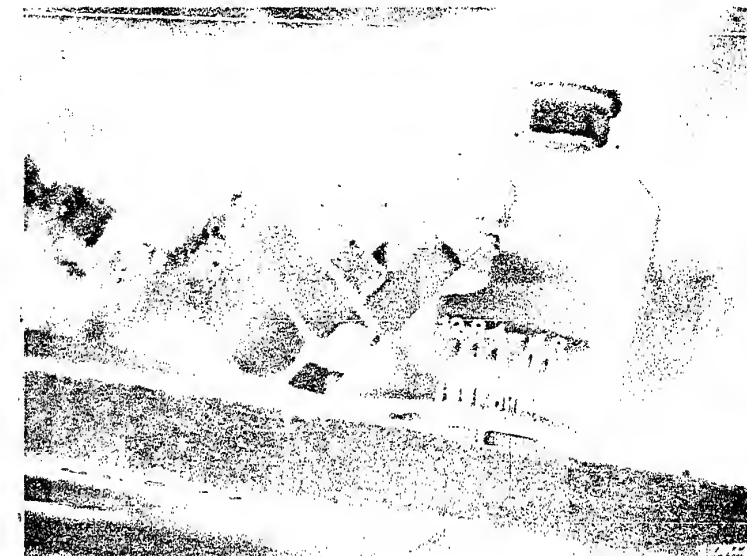
(In the case of clearly incorrect indication of engine speed on testers, connect in series resistor or convert motortester).

Basic ignition setting must be  $10^\circ$  BTDC.

Basic ignition setting correct?

no

Loosen ignition distributor mounting and turn ignition distributor so that  $10^\circ$  BTDC is reached. See picture for marks.



Ignition timing mark

yes

Continued on D 20 / D 21

**D 18**

Trouble-shooting program

Peugeot



**D 19**

Trouble-shooting program

Peugeot



yes

Test ignition timing unit spark advance.

Remove hose from pressure/vacuum advance mechanisms (ignition distributor).

Start engine and run at  $2500 \pm 50 \text{ min}^{-1}$ .

Note:

Indicator lamp must not flash during this measurement.

The spark advance must be  $26...32^\circ \text{ BTDC}$ .

Spark advance correct?

no

Replace ignition timing unit.

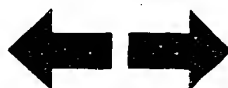
yes

Continued on D 22 / D 23

Ignition timing mark

**D20**

Trouble-shooting program  
Peugeot

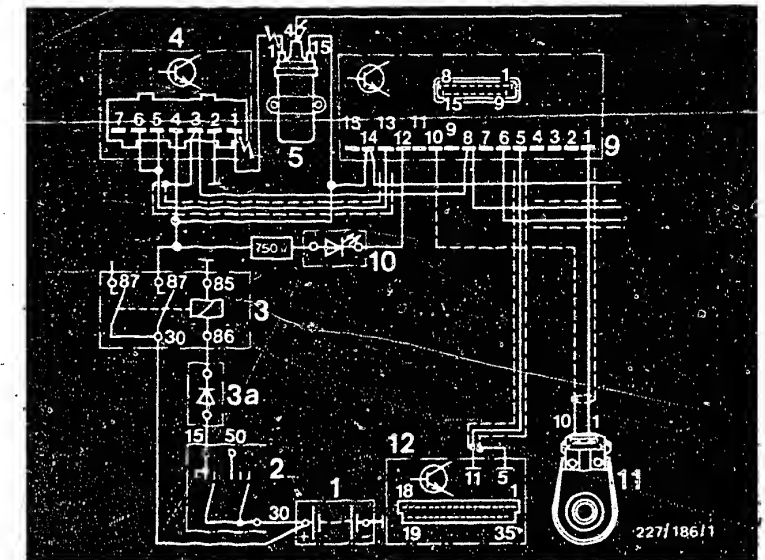
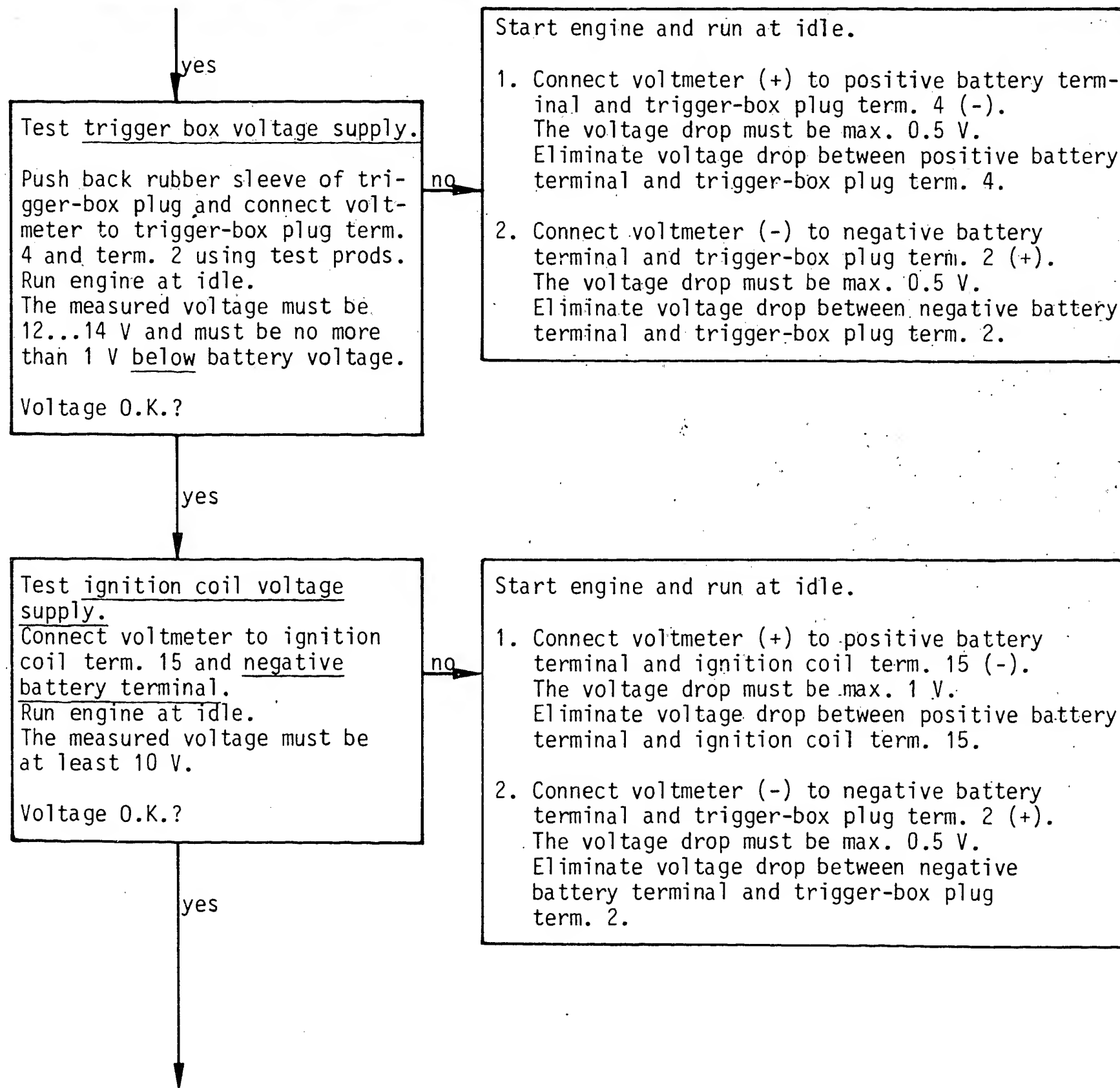


**D21**

Trouble-shooting program  
Peugeot



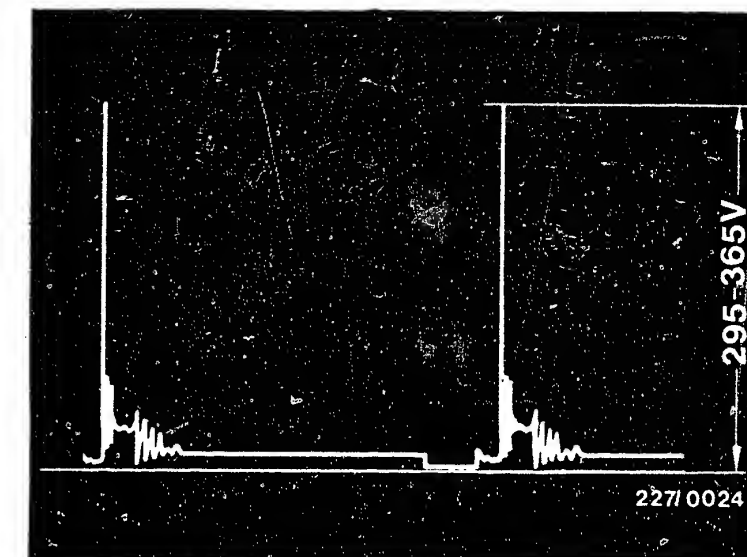
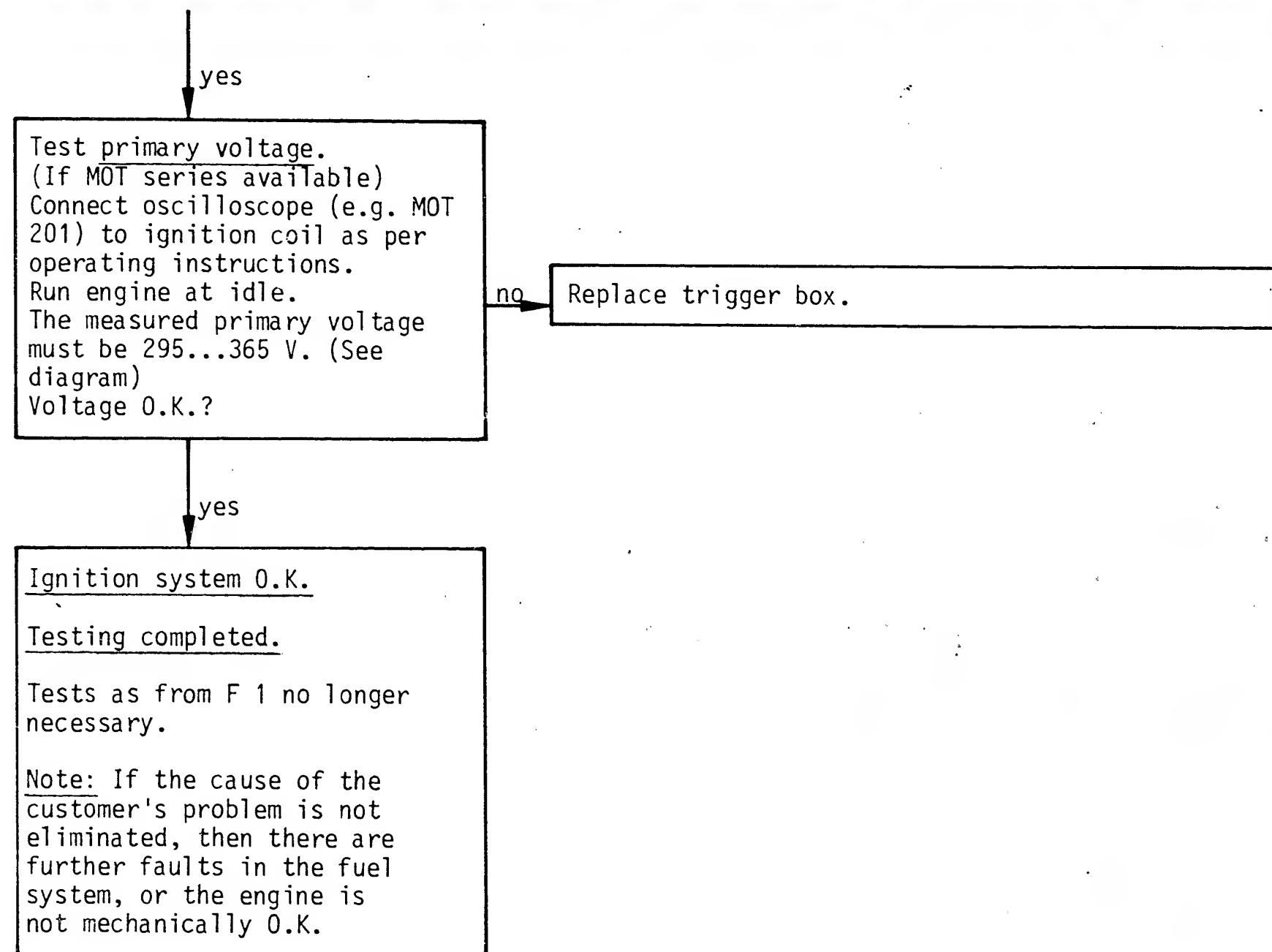




Section from terminal diagram

- 1 = Battery
- 2 = Ignition and starting switch
- 3 = Power-supply relay
- 3a = Reversed-polarity protection diode
- 4 = Trigger box
- 5 = Ignition coil
- 9 = Knock control unit
- 10 = Indicator lamp
- 11 = Knock sensor
- 12 = L-Jetronic control unit
- ⚡ = Dangerous voltages (400 V - 25 kV)





**E1**

Trouble-shooting program

Peugeot



**E2**

Trouble-shooting program

Peugeot



No primary signal or no ignition spark

(Continued from C 13/C 14)

yes

Test ignition distributor connector and socket.

Release locking wire on ignition distributor connector (arrow).  
Remove ignition distributor connector.

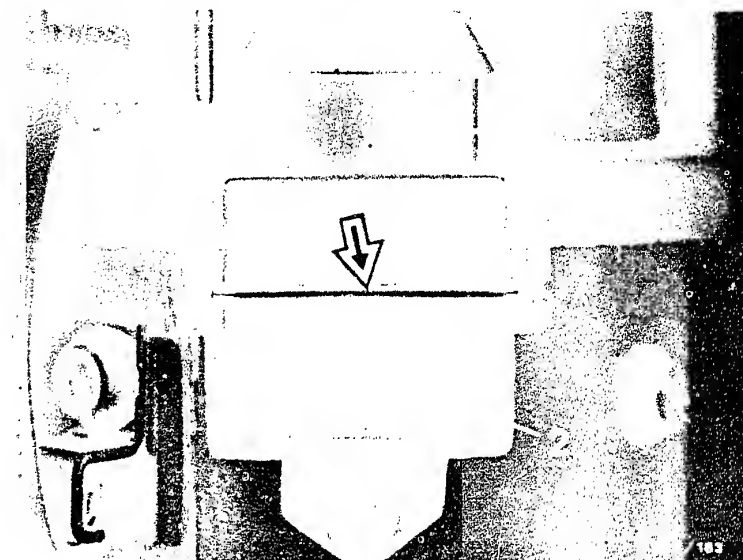
Visual examination:

Check contacts of ignition distributor connector and socket for oxidation.

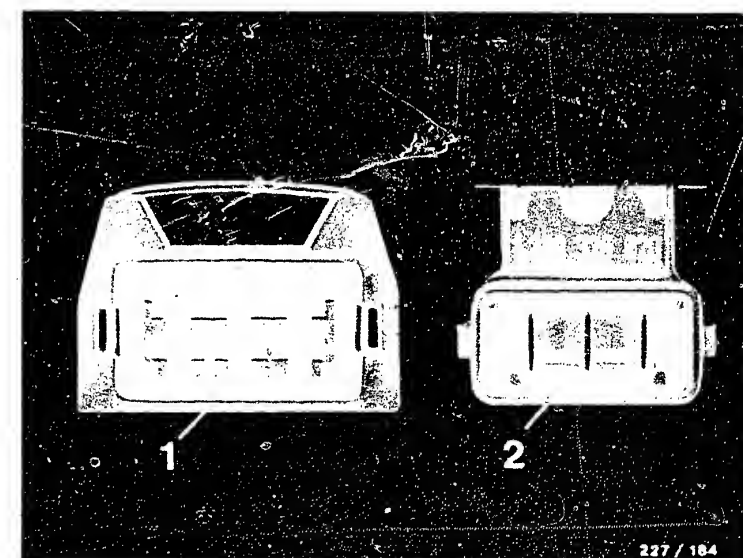
Eliminate oxidation. Reconnect ignition distributor connector.  
Start engine. If primary signal still not present, then continue testing.

yes

Continued on F 3/ F 4



1 = Ignition distributor connector  
2 = Ignition distributor socket



F1

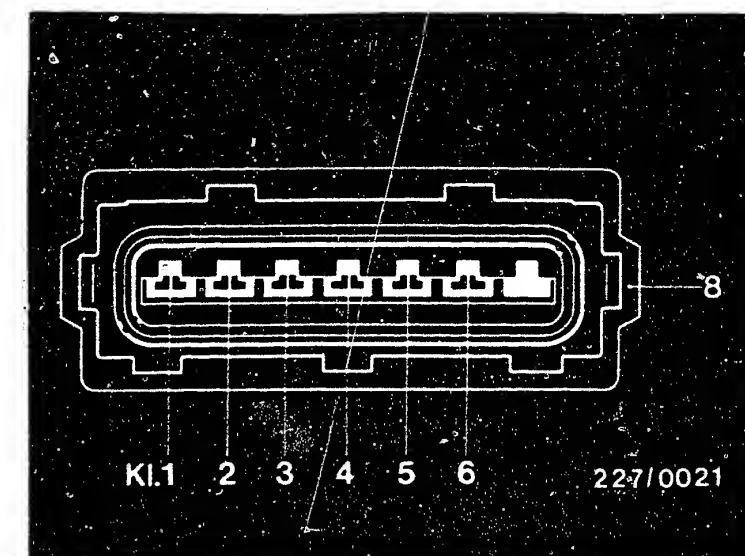
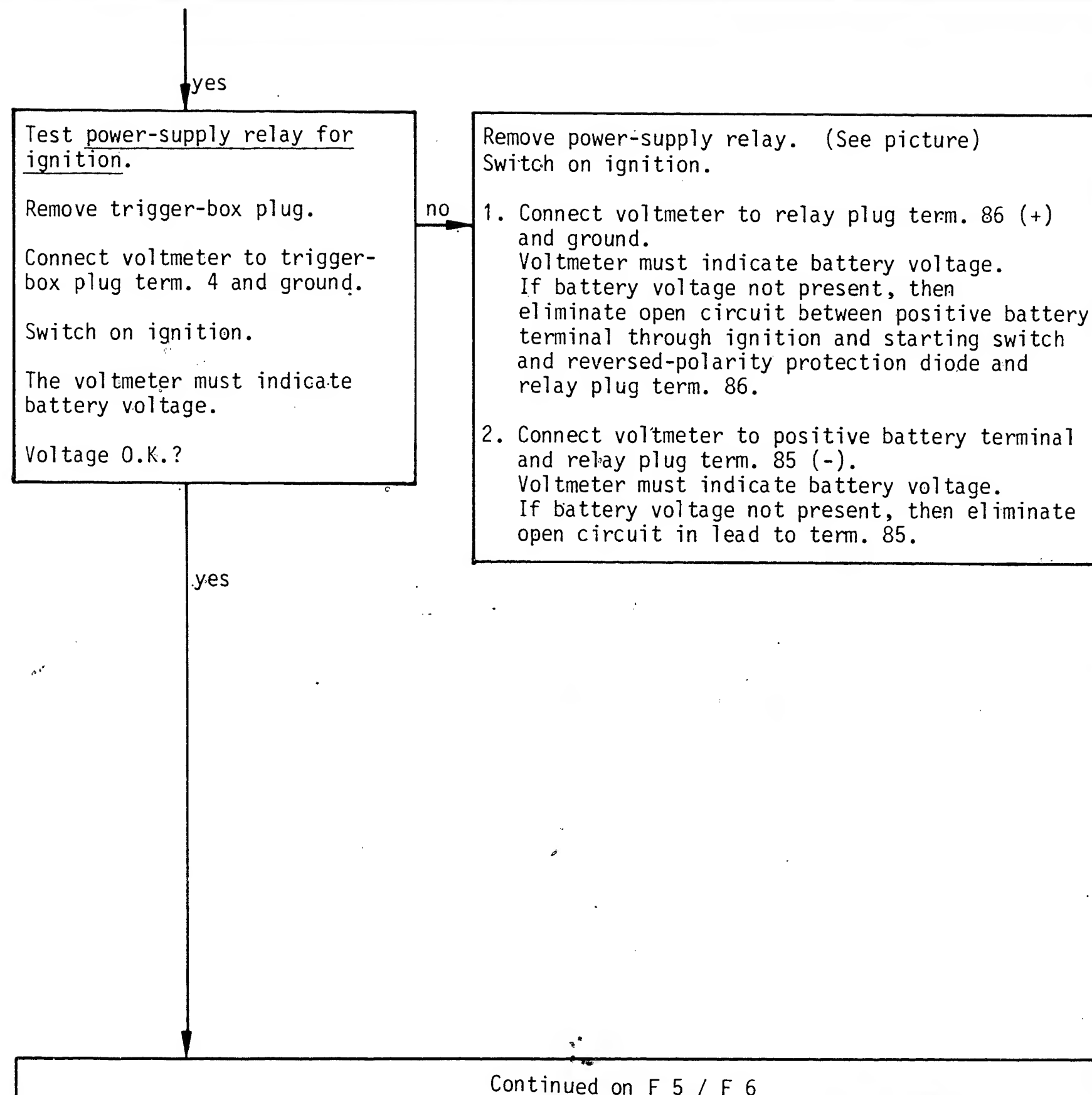
Trouble-shooting program  
Peugeot



F2

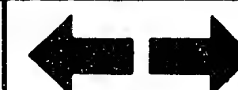
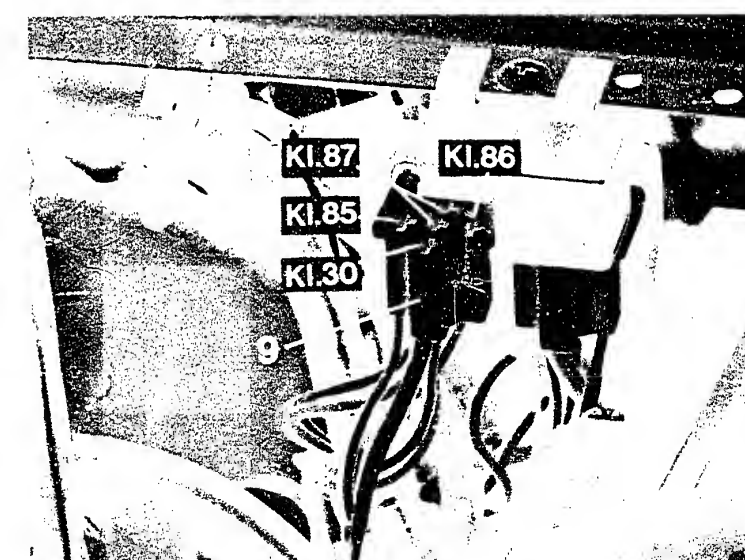
Trouble-shooting program  
Peugeot





8 = Trigger-box plug

9 = Relay plug

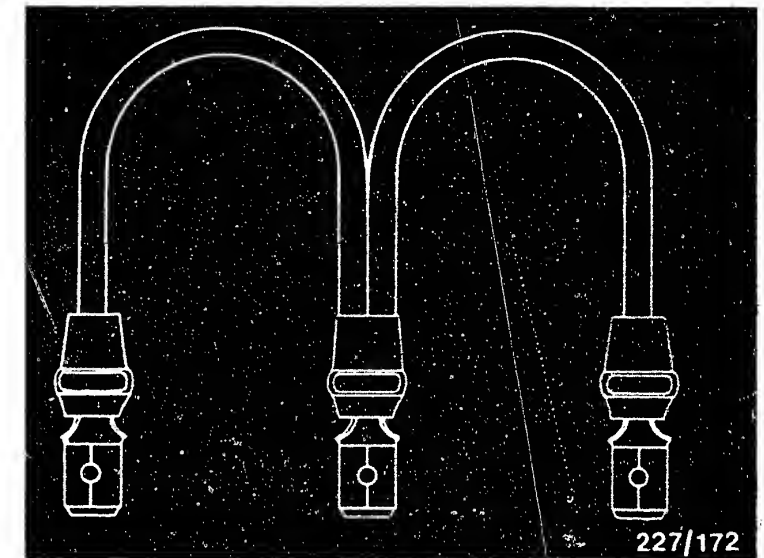


Continued

3. Connect relay plug term. 30 and both term. 87 using auxiliary lead (bridge). Connect voltmeter to ground and, one after the other, to relay plug term. 30, 87 and 87 and trigger-box plug term. 4. In each case voltmeter must indicate battery voltage. If battery voltage not present, then eliminate open circuit.

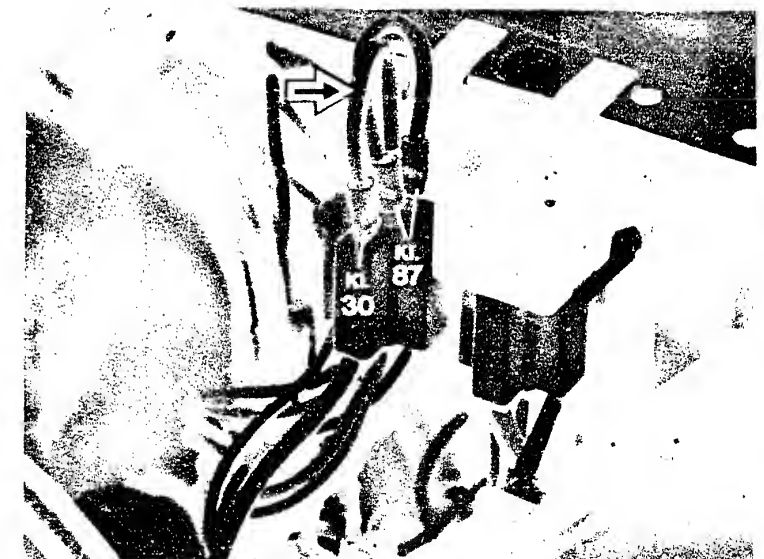
If points 1 2 and 3 O.K., then replace power-supply relay.

yes



1 = Auxiliary lead (bridge)

2 = Relay plug



Continued on F 7 / F 8

**F5**

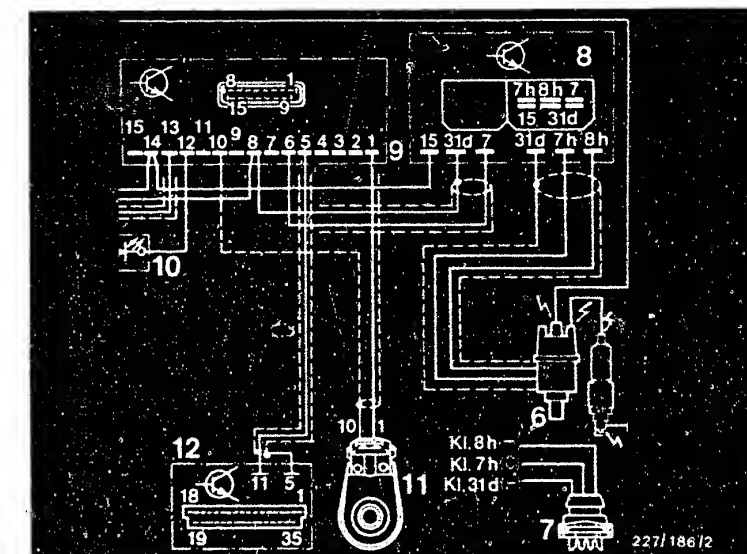
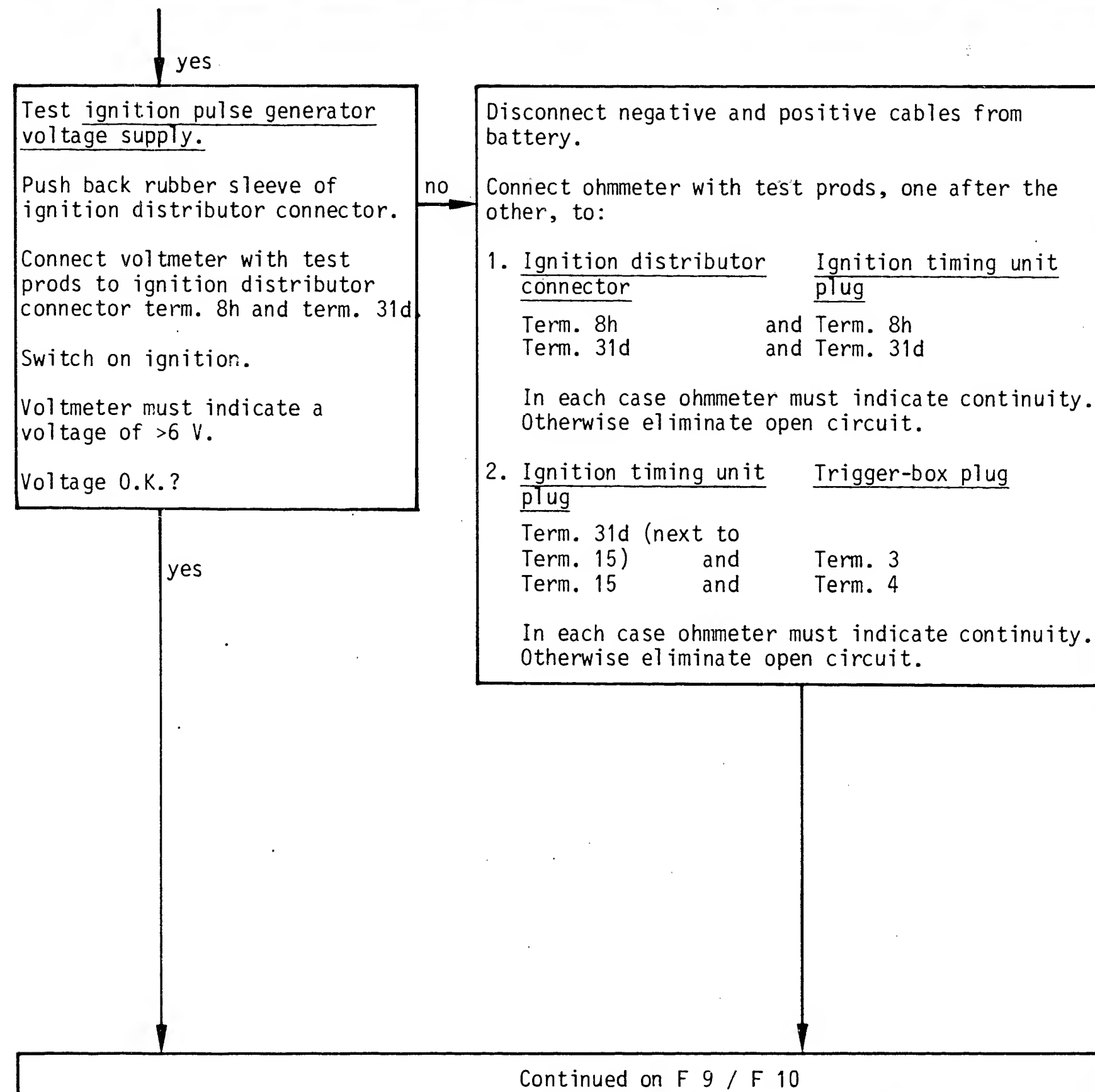
Trouble-shooting program  
Peugeot



**F6**

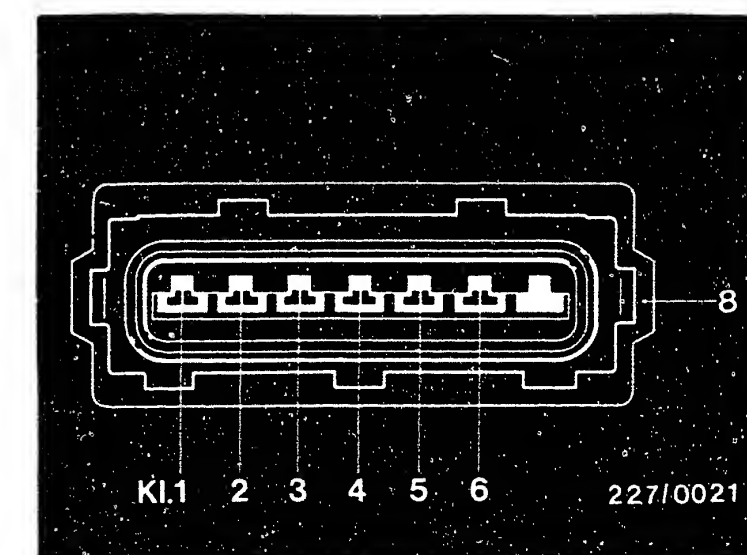
Trouble-shooting program  
Peugeot





Section from terminal diagram

- 6 = Ignition distributor
- 7 = Ignition distributor connector
- 8 = Ignition timing unit
- 9 = Knock control unit
- 10 = Indicator lamp
- 11 = Knock sensor
- 12 = L-Jetronic control unit
- ⚡ = Dangerous voltages (400 V - 25 kV)
- 9 = Trigger-box plug



F7

Trouble-shooting program  
Peugeot



F8

Trouble-shooting program  
Peugeot



Continued

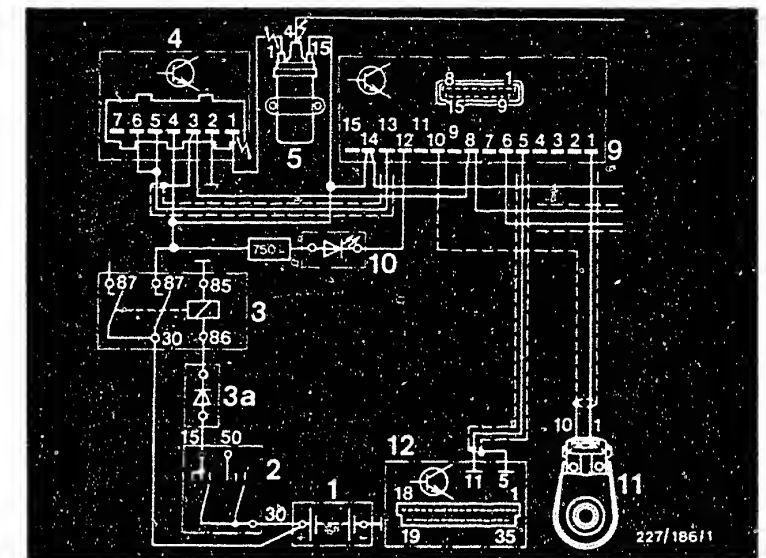
3. Trigger-box plug      Battery terminal  
Term. 2                      and      Negative terminal

Ohmmeter must indicate continuity.

Otherwise eliminate open circuit.

If there was no open circuit in points 1, 2 or 3,  
then replace ignition timing unit.

yes



Section from terminal diagram

- 1 = Battery
- 2 = Ignition and starting switch
- 3 = Power-supply relay
- 3a = Reversed-polarity protection diode
- 4 = Trigger box
- 5 = Ignition coil
- 9 = Knock control unit
- 10 = Indicator lamp
- 11 = Knock sensor
- 12 = L-Jetronic control unit
- ⚡ = Dangerous voltages (400 V - 25 kV)

Continued on F 11 / F 12





yes

### Test ignition pulse generator.

Connect oscilloscope as per operating instructions with program switch in "special" position.

MOT 201 for example:

Red clip with test prod to ignition distributor connector term. 7h (measured signal).

Black clip to vehicle ground.

Start engine.

The oscilloscope must show a rectangular pulse. See diagram.

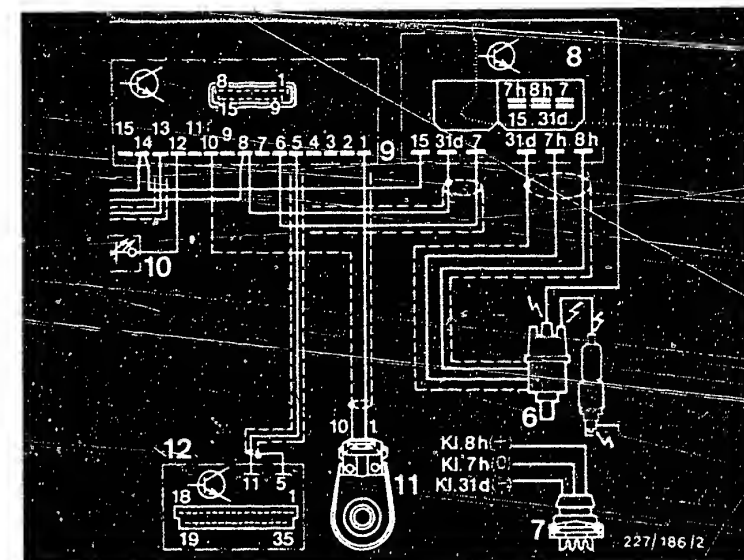
Rectangular pulse present?

no

Replace ignition pulse generator and/or ignition distributor.

yes

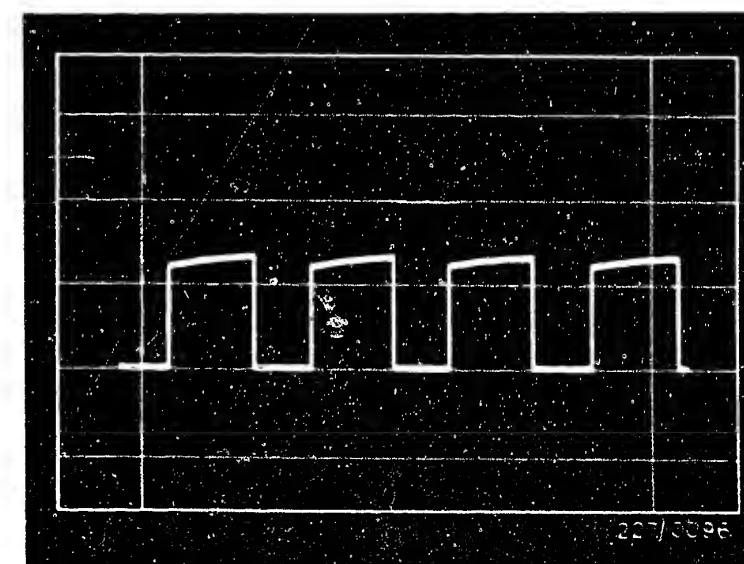
Continued on F 13 / F 14



### Section from terminal diagram

- 6 = Ignition distributor
- 7 = Ignition distributor connector
- 8 = Ignition timing unit
- 9 = Knock control unit
- 10 = Indicator lamp
- 11 = Knock sensor
- 12 = L-Jetronic control unit

⚡ = Dangerous voltages  
(400 V - 25 kV)



**F11**

Trouble-shooting program  
Peugeot



**F12**

Trouble-shooting program  
Peugeot





yes

# Test ignition timing unit pulse.

Remove ignition timing unit  
(do not remove plug).

Connect oscilloscope as per  
operating instructions with  
program switch in "special"  
position.

MOT 201 for example:  
Red clip with test prods to  
ignition timing unit plug  
term. 7 (measured signal).  
Black clip to vehicle ground.  
Start engine.  
The oscilloscope must show a  
rectangular pulse. See  
diagram.

Rectangular pulse present?

no

Remove ignition distributor connector.  
Connect ohmmeter to:

Ignition distributor  
connector

Term. 7h

and Term. 7h

Ignition timing unit  
plug

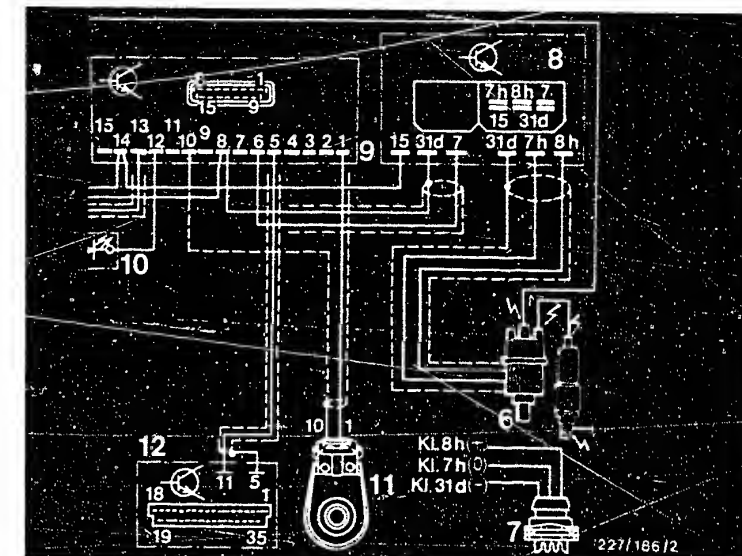
Ohmmeter must indicate continuity.

Otherwise eliminate open circuit.

If there was no open circuit, then replace  
ignition timing unit.

yes

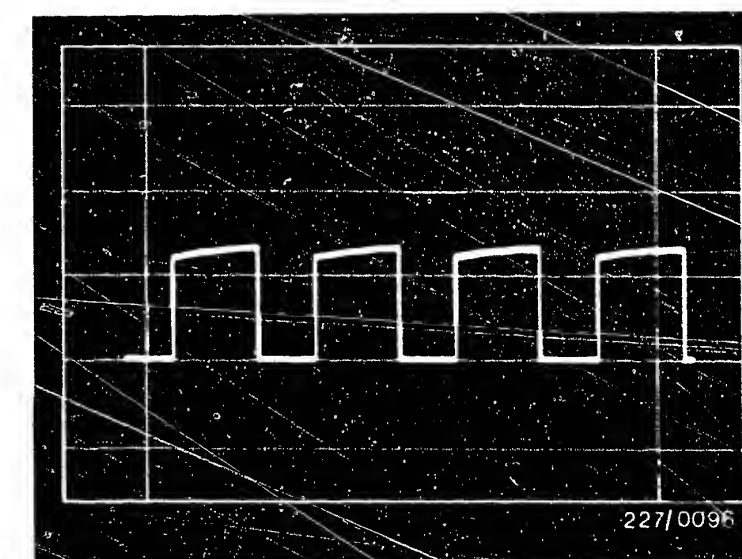
Continued on F 15 / F 16



## Section from terminal diagram

- 6 = Ignition distributor
- 7 = Ignition distributor connector
- 8 = Ignition timing unit
- 9 = Knock control unit
- 10 = Indicator lamp
- 11 = Knock sensor
- 12 = L-Jetronic control unit

⚡ = Dangerous voltages



**F13**

Trouble-shooting program

Peugeot



**F14**

Trouble-shooting program

Peugeot



yes

Test knock control unit.

Remove knock control unit (do not remove plug).

Connect oscilloscope as per operating instructions with program switch in "special" position.

MOT 201 for example:  
Red clip with test prod to knock control unit plug term. 13 (measured signal).  
Black clip to vehicle ground.  
Start engine.  
The oscilloscope must show a rectangular pulse.  
See diagram.

Rectangular pulse present?

yes

Continued on F 17 / F 18

no

Remove the plugs from knock control unit and ignition timing unit.

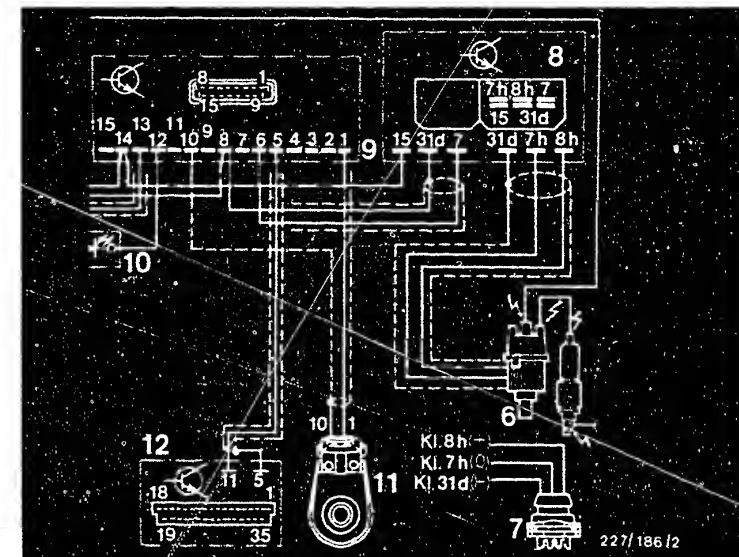
Connect ohmmeter to:

<u>Knock control unit plug</u>	<u>Ignition timing unit</u>
Term. 6	Term. 7

Ohmmeter must indicate continuity.

Otherwise eliminate open circuit.

If there was no open circuit, then replace knock control unit.



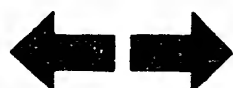
Section from terminal diagram

- 5 = Ignition coil
- 6 = Ignition distributor
- 7 = Ignition distributor connector
- 8 = Ignition timing unit
- 9 = Knock control unit
- 10 = Indicator lamp
- 11 = Knock sensor
- 12 = L-Jetronic control unit

**F15**

Trouble-shooting program

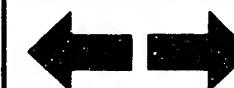
Peugeot



**F16**

Trouble-shooting program

Peugeot



yes

Test trigger box control line.

Remove trigger-box plug.

Connect oscilloscope as per operating instructions with program switch in "special" position.

MOT 201 for example:  
Red clip with test prod to trigger-box plug term. 5 and 6 one after the other (measured signal).

Black clip to vehicle ground.  
Start engine.  
The oscilloscope must show a rectangular pulse at both terminals. See diagram.

Rectangular pulse present?

yes

Continued on F 19 / F -20

no

Remove knock control unit plug.

Connect ohmmeter, one after the other, to:

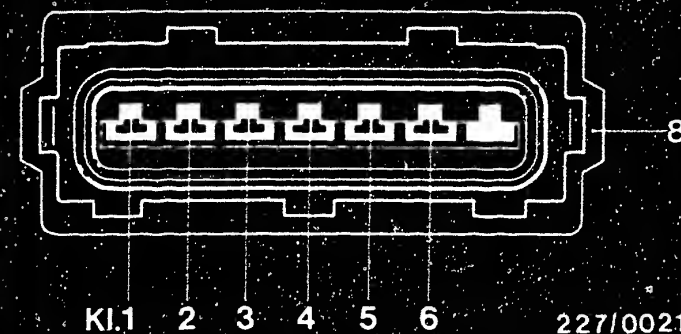
<u>Knock control unit plug</u>	<u>Trigger-box plug</u>
--------------------------------	-------------------------

Term. 13	and Term. 5
----------	-------------

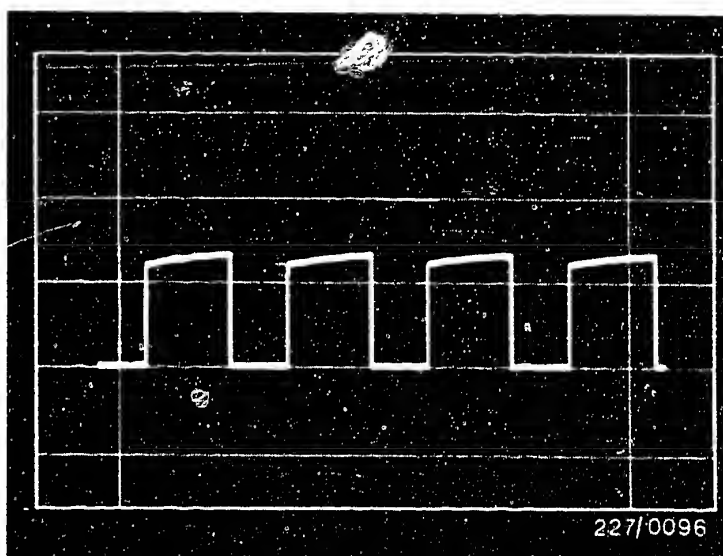
Term. 13	and Term. 6
----------	-------------

In each case ohmmeter must indicate continuity.

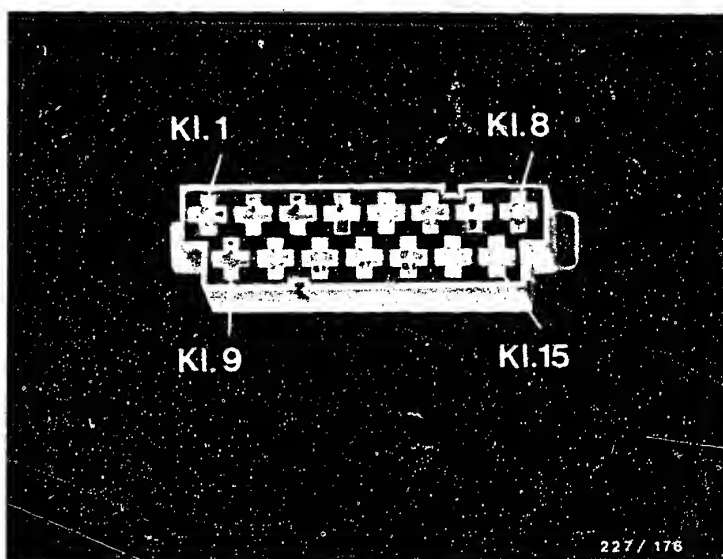
Otherwise eliminate open circuit.



227/0021



227/0096



227 / 176

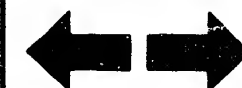
**F17**

Trouble-shooting program  
Peugeot



**F18**

Trouble-shooting program  
Peugeot



yes

Test trigger box ground connection.

Remove trigger-box plug.

Connect voltmeter to trigger-box plug between term. 4 (+) and term. (-).

Switch on ignition.

The voltmeter must indicate battery voltage.

Voltage O.K.?

no

Test trigger-box plug ground lead term. 2 for open circuit.

Eliminate open circuit.

yes

Test primary circuit.

Connect voltmeter to disconnected trigger-box plug between term. 1 and term. 2.

Switch on ignition.

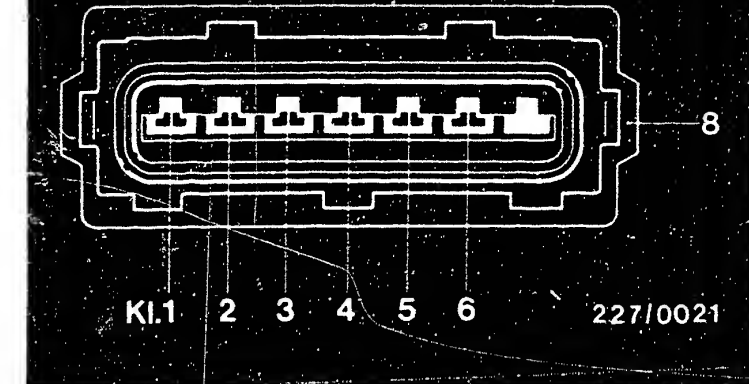
The voltmeter must indicate battery voltage.

Voltage O.K.?

no

Check for open circuit in lead from power-supply relay term. 87 to ignition coil term. 15, primary winding of ignition coil, as well as in lead from ignition coil term. 1 to trigger-box plug term. 1. Eliminate open circuit.

Continued on F21 / F 22



8 = Trigger-box plug

Section from terminal diagram

1 = Battery

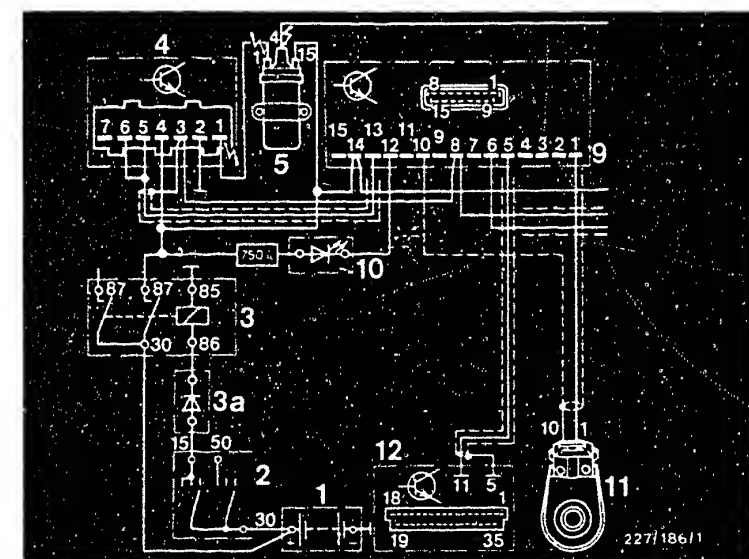
2 = Ignition and starting switch

3 = Power-supply relay

4 = Trigger box

5 = Ignition coil

⚡ = Dangerous voltage (400 V - 25 kV)



**F19**

Trouble-shooting program  
Peugeot



**F20**

Trouble-shooting program  
Peugeot



yes

### Test ignition coil.

#### Visual examination:

Remove protective cap from ignition coil and check that plug (see picture) is in position and that no sealing compound has escaped.

#### Electrical test:

Ignition coil primary (term. 15 and term. 1)  
0.7...1.2  $\Omega$  (take resistance of test lead with test prods into account).

Ignition coil secondary (term. 1 and term. 4)  
6.9...11.9 k $\Omega$ .

Plug in position and no sealing compound escaped.

Resistance O.K.?

no

1. If plug is not in position and/or sealing compound has escaped, then replace trigger box and knock control unit as well as ignition coil.

2. If resistance values are not O.K., then replace ignition coil.

yes

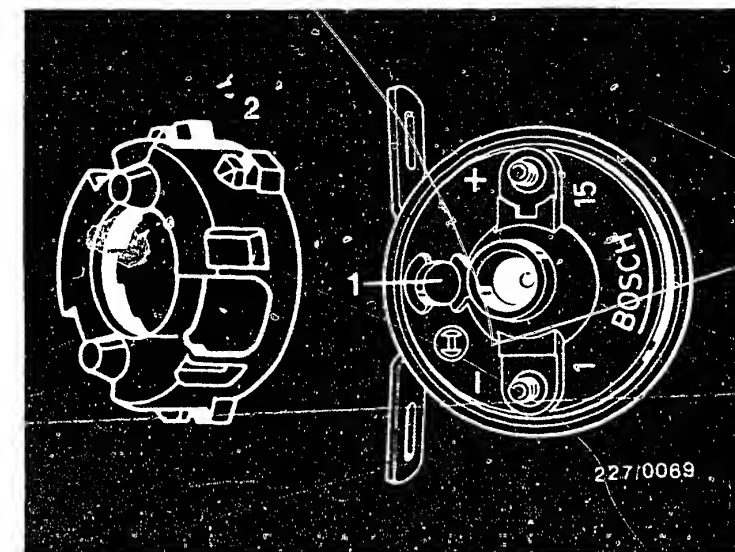
Replace trigger box.

#### Testing completed.

Tests as from C 15 not necessary.

#### Note:

If the cause of the customer's problem is not eliminated, then there are further faults in the fuel system, or the engine is not mechanically O.K.



1 = Plug

2 = Protective cap



# After-sales Service

## Technical Bulletin

Only for use within the Bosch organization. Not to be communicated to any third party.

22

Danger of Accident on Semi-conductor Ignition Systems

VDT-I-227/102 B

11.1976

Please be sure to pass this bulletin on to your employees for their attention.

The increased demands made on their ignition systems by modern engines, and the wish for freedom from maintenance, led some time ago to manufactures starting to equip their vehicles with semi-conductor ignition systems as original equipment. In most cases the performance of nearly all makes of such systems is higher than that of conventional systems, and further improvements are to be expected. This means that semi-conductor ignition systems have reached the point where contact with "live" parts or contacts (whether on the primary side or the secondary side) can prove fatal.

In this connection we should like to point out to you that the laws valid in your country regarding work on high-voltage systems must be adhered to when working on, or testing, semi-conductor ignition systems.

As a matter of principle, when working on such ignition systems the ignition is to be switched off. Included in such work are the following operations:

- Connection of engine testing equipment (timing light, dwell-tach tester, ignition oscilloscope etc.).
- Replacement of ignition system parts (spark plugs, ignition coil, ignition distributor, H.T. ignition cables etc.).

If it is necessary to switch on the ignition in order to test the system or make adjustments on the engine (to the carburetor for instance), then lethal voltages are present throughout the entire system.

This means that the danger of accident exists not only at individual components in the system (e.g. ignition distributor, ignition coil, trigger box, ignition harness), but also at the wiring harness (e.g. connection for the tachimeter, diagnostic connector), on terminals, and on test equipment.

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**L1**

Technical Bulletin  
Peugeot

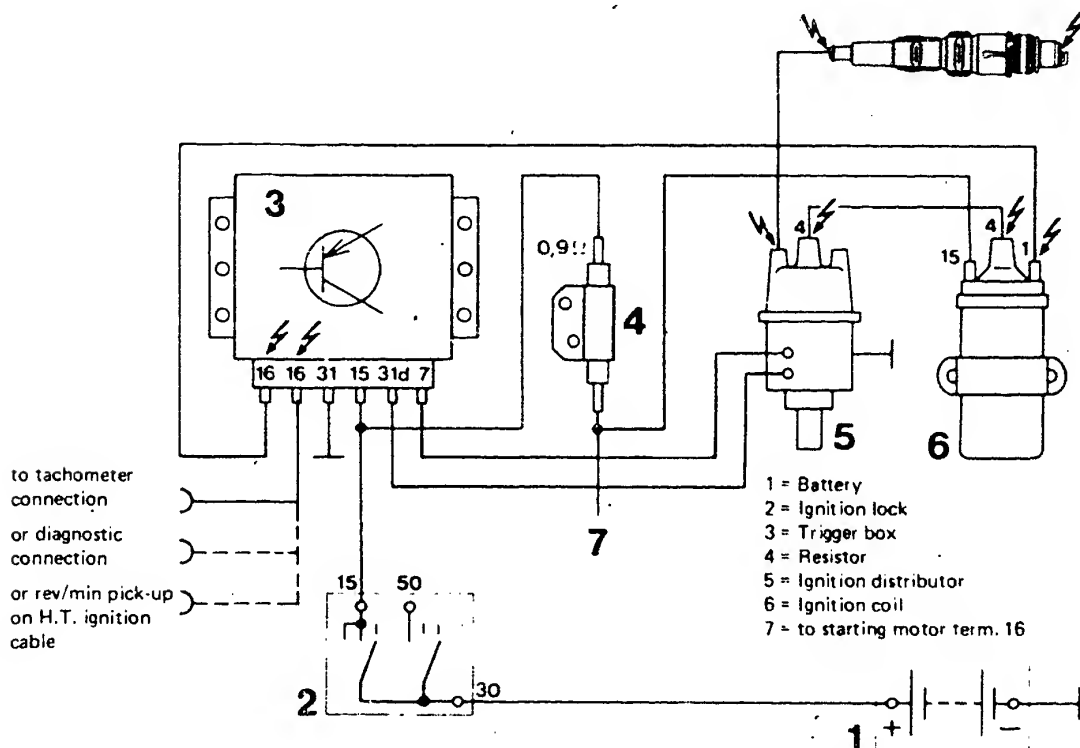


In addition, in the case of the capacitor-discharge ignition system (CDi), danger of accident is also present under the following circumstances:

- Operation of the trigger box without the ignition transformer.
- At the trigger box, (removed), relatively soon after it has been switched off (capacitor discharge).

Below is a typical terminal diagram of a semi-conductor ignition system, the danger points are marked with red high-voltage arrows. We would point out that all semi-conductor ignition systems, even the older ones, are to be regarded as dangerous in the sense as defined by this bulletin.

Please address any queries or comments concerning the contents of this publication to our representative in your country.



Terminal diagram

# After-sales Service

## Technical Bulletin

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EFFECTS OF ELECTRICAL AND ELECTRONIC  
SYSTEMS ON HEART PACEMAKERS

VDT-I-227/107 En  
1.1981

e.g. ignition systems, Jetronic, Motronic, ABS

Please ensure without fail that this Bulletin is passed on to your employees for their attention!

We have often been asked by some of our customers whether or not patients with heart pacemakers are endangered in any way by ignition systems. This theme was recently the subject of an examination carried out by the Ignition System Development Department of Robert Bosch GmbH in conjunction with Dr. Thull, lecturer at the Central Institute for Biomedical Technology at the University of Erlangen-Nürnberg and Biotronic GmbH & Co. of Berlin, a manufacturer of heart pacemakers. The magazine "Biomedizinischen Technik" (5/80) listed the results.

The most important discoveries in this practice can be summarized from the examination report as follows:-

1. Heart pacemakers corresponding to the latest state of the art are not affected by radiation (electromagnetic fields) from ignition systems.
2. With a stationary engine and the ignition switched off the heart pacemaker is not affected by any part of the ignition system, even when unintentionally touched. Maintenance work in the engine compartment, for example, can then be carried out without any danger.
3. With the engine running or stationary with the ignition switched on, touching current-carrying parts of the ignition system, as well as parts of any other electrical system, presents a certain danger for everybody. The heart pacemaker can here be affected under certain conditions (voltage, current and frequency). Patients with heart pacemakers should therefore at all costs avoid touching current-carrying parts of electrical systems.
4. Furthermore, patients with heart pacemakers are more inclined to psychic shock effects than other people, even when they receive just a harmless electric shock, because many such patients are conscious of the increased danger to the cardiac activity.

We therefore consider it inadvisable for patients with heart pacemakers to be employed in workshops or on vehicles where ignition systems are being tested or repaired. If any members of your staff have heart pacemakers please carry out the necessary measures.

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Peugeot





We would like to add that heart pacemakers are not expected to be affected in any way by interference from other electronic products and systems which we manufacture, such as the Antiskid System (ABS), Jetronic, Motronic, because the much greater radiation intensity of the ignition systems examined in normal use has not caused any interference to heart pacemakers corresponding to the latest state of the art.

If you should receive questions on this matter from customers, please inform them accordingly.



# After-sales Service

## Technical Bulletin

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### BREAKERLESS TRANSISTORIZED IGNITION SYSTEM

22

#### Warranty note

VDT-I-227/103 En  
3.1979

hybrid construction trigger boxes  
0 227 100 100 for ignition distributor  
with Hall generator (TCI-h)  
0 227 100 102 for ignition distributor  
with induction-type  
pulse generator (TCI-i)

Apart from the well-known TCI trigger boxes 0 227 100 0.., trigger boxes of hybrid construction have been fitted as standard since 9.78 (Fig. 1).

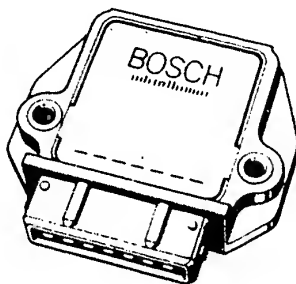


Fig. 1

#### Warranty procedure.

If the complaints are justified, all these hybrid trigger boxes are to be sent, along with completed warranty documents, to your authorized representative for forwarding to the following address:

ROBERT BOSCH GMBH  
KH/LAV - Auspackraum

zur Weiterleitung an K1/VAK 21

D-7000 Stuttgart 30

This instruction remains valid until further notice.

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Peugeot



# After-sales Service

## Technical Bulletin

13-39

Only for use within the Bosch organization. Not to be communicated to any third party.

KNOCK SENSOR

VDT-I-227/110 En

0 261 231 ..

3.1983

Procedures for after-sales service

### Description

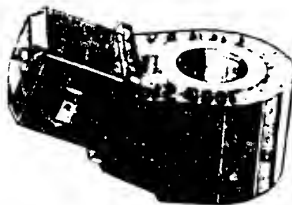
The knock sensor contains an active piezoceramic element. It is screwed to a chosen position on the engine block and sends a structure-borne signal which is processed further by an electronic control unit.

### User

Saab is the first vehicle manufacturer to use the knock sensor which is being fitted to various turbo vehicles.

### Components

Knock sensor 0 261 231 ... \*



\* The exact part numbers are given on the appropriate vehicle-equipment microcards AA... .

### Service/exchange parts

The knock sensor is a service part and is supplied by Bosch. The remaining components of the knock control are products made by other firms.

### Technical documentation

Technical bulletin "New product" VDT-I-227/10 En.

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Technical Bulletin  
Peugeot



#### 4. Test instructions

##### 4.1 Standard ignition systems

Switch position: "standard"

All other tester connections as per operating instructions.

##### 4.2 Ignition systems with current limitation

Switch position: "current limitation"

In order to trigger the timing light, the induction-type pulse generator (clamp-on pickup or red pickup) must always be connected during the measurement.

The selector switch for ignition systems built into the motortester must be switched to standard coil ignition (not to TCI) with these ignition systems.

All other tester connections as per operating instructions.

The dwell angle is electronically controlled. A measurement of the dwell angle is no longer performed.



# After-sales Service

## Technical Bulletin

Only for use within the Bosch organization. Not to be communicated to any third party.

### NEW DESIGNATIONS FOR IGNITION SYSTEMS

VDT-I-227/108 En

1.1983

The introduction of new ignition systems has made it necessary to reclassify all designations.

The designations listed below will be used immediately in KH workshop and sales literature.

Designation	Abbrev'd code	Meaning	Switching	Ignition control and spark advance	High-voltage distribution
Coil ignition	SZ (CI)	-----	Mechanical (breaker points)	Mechanical (ignition distributor)	Mechanical (ignition distributor)
Transistorized coil ignition	TSZ-K (TCI-c)	K=breaker-triggered	Electronic (trigger box)	Mechanical (ignition distributor)	Mechanical (ignition distributor)
Trigger box with conventional circuit techniques	TSZ-I* (TCI-i)	I=Induction-type pulse generator	Electronic (trigger box)	Mechanical (ignition distributor)	Mechanical (ignition distributor)
	TSZ-H	H=Hall generator	Electronic (trigger box)	Mechanical (ignition distributor)	Mechanical (ignition distributor)
Transistorized ignition	TZ-I* (TI-i)	I=Induction-type pulse generator	Electronic (trigger box)	Mechanical (ignition distributor)	Mechanical (ignition distributor)
(Trigger box in Hybrid technique)	TZ-H* (TI-h)	H=Hall generator	Electronic (trigger box)	Mechanical (ignition distributor)	Mechanical (ignition distributor)

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Technical Bulletin

Peugeot



Designation	Abbrev'd code	Meaning	Switching	Ignition control and spark advance	High-voltage distribution
Breakerless semiconductor ignition with or without knock control	EZ EZ-K	- K=Knock control	Electronic (trigger box or control unit)	Electronic (control unit)	Mechanical (ignition distributor or high-voltage distributor)
Distributorless ignition with or without knock control	VZ VZ-K	- K=Knock control	Electronic (control unit)	Electronic (control unit)	Electronic (dual-spark ignition coil, or 1 ignition coil for each spark plug)

\*Note: The ignition system can also be equipped with a DLS unit (digital idle stabilization) or with an ELS unit (electronic idle stabilization) or with an ESV unit (electronic ignition retardation).



# After-sales Service

## Motor Vehicle Service Information

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INCORRECT DISPLAY OF ROTATIONAL SPEED AND  
DWELL ANGLE ONLY WITH TRIGGER BOXES  
0 227 100 ... (TCI-i, TCI-h) WITH CURRENT  
LIMITATION

VDT-I-Gen. 030 En  
6.80  
Supersedes Ed. 3.80

For additional information see VDT-I-Gen. 032 En

### 1. General

In comparison with conventional ignition systems, transistorized ignition systems with current limitation have different primary voltage characteristics. During the dwell period the voltage at terminal 1 of the ignition coil may assume values from 1.5 V to battery voltage (or greater). This may lead to an incorrect display of rotational speed and dwell angle when testing the ignition system. However, there is no functional defect in the ignition system, and, for this reason, the trigger box must not be replaced. Incorrect displays may occur with the testers listed below:

MOT 001.00	Rotational-speed	KTE 001.00
001.01	display O.K. with these	001.02
001.02	testers	001.03
001.04		
002.00		

By now, the following vehicles may be fitted with breakerless ignition systems with current limitation:

Audi	(Bosch/Fairchild-ignition system)	Mazda	(Mitsubishi ignition system)
BMW	(Bosch ignition system)	Mitsubishi	(Mitsubishi ignition system)
Citroen	(Delco ignition system)	Nissan-Datsun	(Hitachi ignition system)
Fiat	(Delco ignition system)	Peugeot	(Bosch ignition system)
Ford	(Delco ignition system)	VW	(Bosch/Fairchild ignition system)
General-Motors	(HEI-ignition system)	Bosch transistorized ignition system for retrofitting 0 227 100 920	

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**L10**

Motor Vehicle Service Information  
Peugeot



## 2. Test instructions

### 2.1 Rotational speed

Incorrect rotational-speed display can be recognized as follows:

If one starts at the idle speed and slowly increases the engine speed, then the incorrect display can be recognized by an abrupt reduction in the rotational-speed display (e.g. from 2400 min<sup>-1</sup> to 1200 min<sup>-1</sup>).

It is, however, possible to attain correct rot.-speed measurements as follows:

Connect a ballast resistor of 0.9 or 1.0 Ohm (see Fig.) in series in the line to term. 15 of the ignition coil (take care not to cause a short circuit). After the rotational-speed measurement, the ballast resistor must be removed (otherwise starting difficulties and misfiring). Connect tester as per operating instructions.

### Suggestion for user manufacture

Required parts:

1 ballast resistor 0.9 Ohm

Part No. 0 227 900 002

or

1 ballast resistor 1.0 Ohm

Part No. 0 227 900 101

2 blade receptacles e.g.

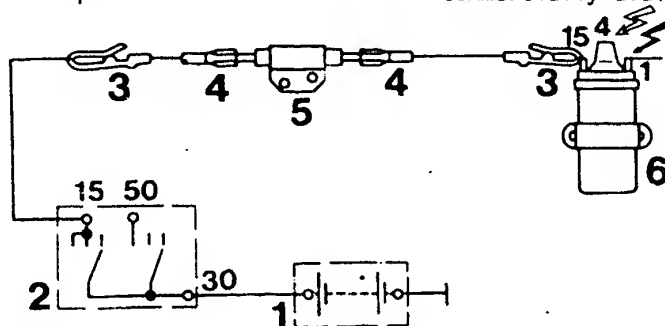
Part No. 1 901 355 881

approx. 0.2 m cable, 1.5 mm<sup>2</sup> e.g.

Part No. 6 210 150 150

2 insulated clips

Commercially available



1 = Battery

2 = Ignition switch

3 = Clips

4 = Blade receptacle

5 = Ballast resistor

6 = Ignition coil

⚡ approx. 400 V

⚡ approx. 25 kV

### 2.2 Dwell angle

The dwell angle is electronically controlled. A measurement of the dwell angle is no longer performed.

### 2.3 Ignition point

Is displayed correctly. Connect tester as per operating instructions.





# After-sales Service

## Motor Vehicle Service Information

Only for use within the Bosch organization. Not to be communicated to any third party.

### MOTORTESTER CONVERSION

Incorrect display of rotational speed,  
dwell angle and ignition point  
only with trigger boxes  
0 227 100 ... (TCI-i, TCI-h) with current  
limitation

VDT-I-Gen. 032 En  
6.80

For additional information see VDT-I-Gen. 030 of 6.80

Re.: Motortester EFAW 268  
263 S 10  
269  
214 B  
AE 2000

### 1. General

Please make sure that the above-mentioned motortesters in your workshop and at your customers (e.g. motor vehicle workshops, oil companies, gas stations, vocational schools etc.) are converted. The conversion is subject to payment and is carried out by the K7 after-sales service of the responsible BG. The standard time is 15 work units (with fitting of switch).

### 2. Why motortester conversion?

In comparison with conventional ignition systems, transistorized ignition systems with current limitation have different primary voltage characteristics. During the dwell period the voltage at terminal 1 of the ignition coil may assume values from 1.5 V to battery voltage (or greater). This may lead to an incorrect display of rotational speed and dwell angle as well as to incorrect triggering of the meter when testing the ignition system. There is, however, no functional defect in the ignition system, and, for this reason, the trigger box must not be replaced. Since, with the above-listed motortesters, the timing light is triggered by the signal path dwell angle - meter, this incorrect triggering also leads to incorrect flashing and thus to an incorrect display of the advance angle.

### 3. Conversion measures

The situation is to be remedied by modifying the wiring of the testers so that the timing light is triggered by the clamp-on induction pickup and the pulse shaper stage.

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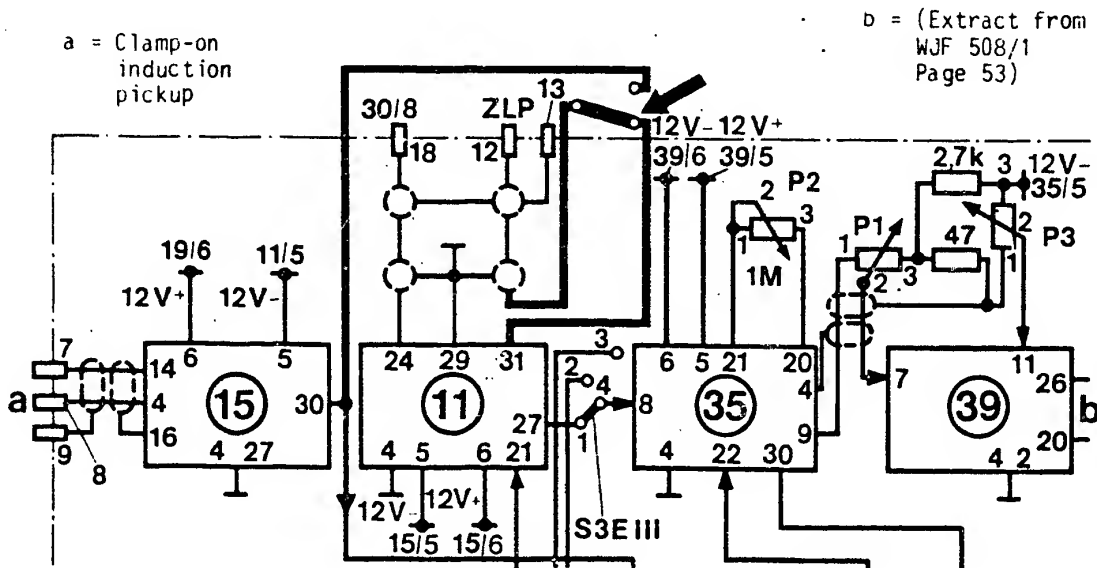
**L12**

Motor Vehicle Service Information  
Peugeot



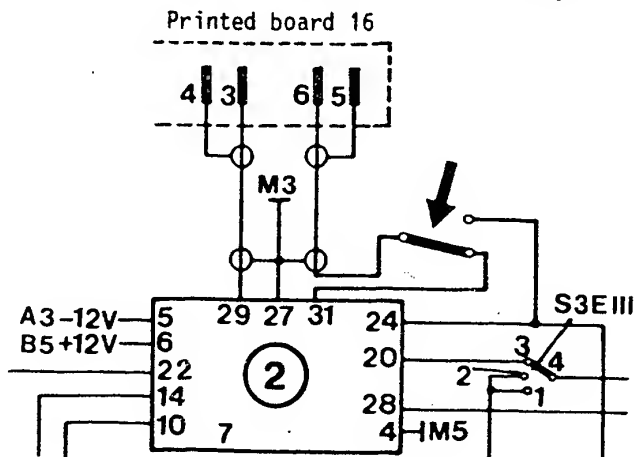
Remove the line of the ZLP\* from pin 31 of printed board 11 (coupling stage) and connect to pin 30 of printed board 15 (pulse shaper stage) via a switch with change-over contact (e.g. 0 341 500 803). In addition, a new line must be connected from pin 31 of printed board 11 to the other contact of the switch with change-over contact. Arrow points to switch with change-over contact.

\* ZLP = timing light



## EFAW 214 B

Remove the line from terminal 6 of printed board 16 to pin 31 of printed board 2 (coupling stage) and connect to pin 24 of the same printed board via a switch with change-over contact (e.g. 0 341 500 803). In addition, a new line must be connected from pin 31 of printed board 2 to the other contact of the switch with change-over contact. Arrow points to switch with change-over contact.



By fitting the switch with change-over contact in the front panel of the motor-tester, it is possible to switch over from standard ignition systems to those with current limitation. We recommend that the switch positions be marked correspondingly: e.g. "standard" - "current limitation". These conversion measures have already been published in the K7 information sheet KJF 28/7911.



### Training

Special training is not necessary.

### Retrofitting

The knock sensor is not intended for retrofitting.

### Warranty procedure

Components on which a claim is being made should be sent for inspection during the warranty period to our representative in your country. He should forward it to:

ROBERT BOSCH GMBH  
KH/LAV - Auspackraum  
zur Weiterleitung an K1/VAK2  
7000 Stuttgart 30  
Federal Republic of Germany

This regulation applies until further notice.



# After-sales Service

## Motor Vehicle Service Information

Only for use within the Bosch organization. Not to be communicated to any third party.

TESTS ON ELECTRONIC IGNITION SYSTEMS  
(TCI, TZ)  
TESTER INSTRUCTIONS

VDT-I-Gen. 035 En  
3.1981

The following tests are listed in older and current Tester operating instructions or in Trouble-shooting with the oscillograph.

- "Separate ignition coil test" (concerns EFAW 213, 214, 268, AE 2000).
- Calculating the "ignition voltage reserve" (concerns EFAW 213, 214, 268, AE 2000 and MOT series).
- "Intensified insulation test" (concerns EFAW 213, 214, 268, AE 2000 and MOT series).

Nowadays transistorized ignition systems deliver more than 30,000 V secondary voltage.

To avoid damage to ignition coil, ignition cable and ignition distributor by voltage flashovers, the tests listed above should not be carried out on transistorized ignition systems.

The contents of this Service Information has already been published in the K7-Information K7-VJF 17/8012.

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**L15**

Motor Vehicle Service Information  
Peugeot



## Table of contents

<u>Section</u>	<u>Coordinate</u>
Structure of microfiche.....A	1
1. Test specifications.....A	2
2. Electrical terminal diagram.....A	4
3. Installation position of components...A	6
4. Necessary test equipment, aids.....A	17
5. Danger of accident on electronic systems.....A	19
6. Incorrect indication of engine speed, dwell angle and ignition point.....A	23
7. Important vehicle information.....A	24
8. Trouble-shooting program.....C	1
Direct trouble-shooting chart for <u>ignition</u> .....C	3
Direct trouble-shooting chart for <u>knock control</u> .....C	7
Detailed trouble-shooting program for ignition and knock control if primary signal/ignition spark present.C	13



## Table of contents (continued)

<u>Section</u>	<u>Coordinate</u>
Detailed trouble-shooting program for ignition and knock control if <u>no</u> primary signal/ <u>no</u> ignition spark.....F	1
Technical Bulletin (Danger of accident).....L	1
Technical Bulletin (Influence of electrical and electronic systems on heart pacemakers).....L	3
Technical Bulletin (Warranty information).....L	5
Technical Bulletin (Warranty information).....L	6
Technical Bulletin (New designations for ignition systems).L	8
Motor Vehicle Service Information (Incorrect indication of engine speed and dwell angle).....L	10
Motor Vehicle Service Information (Motortester conversion).....L	12
Motor Vehicle Service Information (Tests on electronic ignition systems)..L	15



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